

IBM POUGHKEEPSIE

Diagnostic Engineering Publication

1410/7010

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Subject: **Diagnostic Program** **RP01A**
 Sequence Number **503**
 Replaces **R001E, R002D**

I. This Program replaces R001E and R002D for testing the 1402 Reader-Punch when attached to a 1410 or 7010.

II This Program is designed to be compatible with TC50.

III System & Chl Control Cards

System	Card # 001
CHL 1	Card # 002
CHL 2	Card # 003
CHL 3	Card # 004
CHL 4	Card # 005

Enclosures: 73 **Pages**
 Card Deck for CARD ONLY SYSTEMS (as punched by UP51)
 8 **Cards - Card Loader (1-7) and 1 Core Clear**
 177 **Cards No. 001-177 Data Cards**
 1 **Card Execute Card**

Distribution: X 1410
 X 7010
 Other

1402

READER-PUNCH

DIAGNOSTIC PROGRAM

TO BE USED WITH 1410 or 7010 SYSTEMS

RP01A 1402 CARD READER PUNCH TEST

NOTE: THIS PROGRAM USES SYSTEM & CHANNEL CONTROL CARDS



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5.00.00.0 TEST DESCRIPTION

RP01 obsoletes the previous set of Diagnostic programs used on the 1402 (R001 and R002). The new program combines the tests previously performed by both R001 and R002 except for priority and overlap which are now tested in the systems tests. The program uses a common control system with special program options that are made available through the alteration of a SPECIAL TAD. This common control system also makes it possible to develop a straight sequential program which is easy to understand and use. In RP01 the common control system has allowed the development of individual test routines, each independent of the others and capable of operating alone. To further increase the usefulness of the program, the program listing is divided according to the test routines and a description of each routine is included in the listing.

Following is a list in the order in which they occur of the test routines within RP01, a detailed description of each is available in the program listing.

- | | | |
|----|---|---------------|
| A. | Punch Machine Speed | Routine # N01 |
| | Times Cards Punched per Minute | |
| B. | Punch Clutch Test | Routine # N02 |
| | Critical Timing of Clutch Engagement | |
| C. | Test Punch Busy | Routine # N11 |
| | Insure Punch Can Set Busy | |
| D. | Punch Error Deck | Routine # N12 |
| | Punch Error Deck For Reader | |
| E. | Test Wrong Length Record | Routine # N13 |
| | Insure No Cards Punched on WLR | |
| F. | Punch Patterns-Select Pockets-Move Mode | Routine # N05 |
| | Punch and Stack Test Pattern Cards | |
| G. | Punch Patterns-Select Pockets-Load Mode | Routine # N14 |
| | Punch and Stack Test Pattern Cards | |
| H. | Reader Speed Test | Routine # N06 |
| | Times Cards Read Per Minute | |
| I. | Reader Clutch Test | Routine # N04 |
| | Critical Timing of Clutch Engagement | |
| J. | Test Reader Busy | Routine # N15 |
| | Insure Reader Can Set Busy | |

- K. Test Reader Wrong Length Record Routine # N16
 Insure Reader Can Set Wrong Length Record
- L. Test No Transfer Routine # N17
 Insure Reader Can Set No Transfer
- M. Read Error Deck, Test Data Check Routine # N18
 Insure Reader Can Set Data Check
- N. Read Patterns-Select Pockets-Move Mode Routine #N09
 Read Punched Pattern Decks
- O. Read Patterns-Select Pockets-Load Mode
 Read Punched Pattern Decks Routine # N20
- P. Check Reader Stacking Routine # N21
 Check Pockets Where Cards Were Stacked

5.00.01.0 OPERATING PROCEDURE

The following should be read carefully to insure proper operation of the program.

01.1 Preparations previous to Running the Program

- A. Load all 1402 Punches that are to be tested with at least 300 cards and make ready.
- B. Load all 1402 Readers that are to be tested with at least 850 cards and make ready.
- C. Set all 1402 Readers and Punchs not ready that are not to be tested.

01.2 Messages & Requests

- A. "RP01A"
Program Title
- B. "TST CH "
Indicates the channel on which the program is about to test the 1402
- C. "PCH SpD IS / MIN"
Indicates program calculated speed of punch
- D. "CLR BLK CRDS from Pch Pkts"
The CE at this time removes all cards from punch pockets 0, 4, and 8, these cards are all blank.

- E. "CLR Pch, Load CRDs From P-0 In Pch"
The CE clears all cards out of the punch and reloads the cards from pocket 0
- F. "Save CRDs From P-0, Load Pch"
The CE Removes and Saves the Error Deck that is in Pocket 0 and loads blank cards into the punch.
- G. "CHK Rout N13 If CRDs in Any Pch PkT"
The CE insures that there where no cards fed into any pockets.
- H. "Save CRDs From P-0, 4, 8"
The CE Removes the cards from Pocket 0 then 4 and then 8 placing each behind the previous and all of them saved behind the error deck.
- I. "RDR SPD IS /MIN"
Indicate program calculated speed of Reader
- J. "CLR RDR, Load Err & Pattern (P-0, 4, 8) Decks"
The CE clears all the blank cards from the Reader and loads the Error and Pattern Decks previously punched followed by the decks still in the punch pockets, first from Pocket 0 then 4, then 8.
- K. "Load CRDs From P-1, P-2 in RDR"
The CE loads the cards from Reader Pocket 1 and then 2 back into the Reader.
- L. "Pass"
Program Complete

01.3 SPECIAL TADS

There is one special tad used in this program (Memory Location 1004) altering this TAD causes the following changes within the program.

- A. Redefines the Normal TADs 01000-01003

		Not 1	1
01000	TAD 0	Allow error typeouts	Bypass error typeouts
01001	TAD 1	Do not Req loop after error	Req loop after error
01002	TAD 2	No error halts	No error halts
01003	TAD 3	Single program pass	Repeat program

Note: When the TADs are Re Defined TAD 1 = 1 does not mean unconditional looping; rather it means that after an error has occurred, the program will request if the CE wants to take action. At this point the CE may take any of the standard program options available. (These options are described later in the write-up.)

Also, TAD 2 = 1 has no meaning as there are no error halts in RP01 program.

- B. Makes available to the CE a set of 7 program options which allows a greater degree of flexibility when running the program. These options are available by
- a. Press Inquiry Request key
 - b. When the keyboard unlocks, enter
 - 1) Control option code desired
 - 2) Data required by the program to honor the request
 - c. Press Inquiry Release key.

Providing a legal option has been requested, the program will immediately honor the request. If the option is illegal (it does not exist), the program returned to the read console operation, a legal option must be requested.

Table 1 shows the options available, and the code and data required to request the option. See control option definitions for details of each option.

Option	Code	Data Required-Enter
End of Test	Blank	None
Alter TAD's (1000-1003)	1	Four new TAD settings desired (all 4 TAD's altered)
Alter Memory	2	Five-digit memory address to be altered
Loop a Routine	4	Five-digit starting address of routine to be looped
Loop an Instruction	5	Enter M or L, Ch code Char, 1 or 4, Pocket # , W or R, BOSIO Op Code, 80 Char Pch FID
Restart	6	Five-Digit Memory Address to start at
Continue	7	None

TABLE 1

6.00.02.0 OPERATING PROCEDURES (continued)

Definition of Control Options

1. **End Test** - This option will terminate the test immediately unless TAD 3 = 1, in which case the program would restart from the beginning.
2. **Alter TAD's** - This option will alter the standard TAD's to those entered after the option code. This option will not alter any special TAD's.
3. **Alter Memory** - On this option the address to be altered is entered after the option code. After pressing release, the Inquiry Request is pressed again and the alteration is made. Special TAD's may be altered in this manner.
4. **Loop a Routine** - This option causes the program to loop on the routine whose starting address was entered with the option code. When looping a routine, all error typeouts are bypassed and the loop is ended only by pressing Inquiry Request and selecting another option (probably the continue option).
5. **Loop an Instruction** - Through this option the CE may cause the program to loop on either Punch or Reader operations with data fields as requested. The operations which may be selected are:

Read a card and stack in Pocket, 0, 1, or 2
Read a card but do not stack
Stack a card
Punch a card and stack in Pocket, 0, 4, or 8

Besides the control option code, the CE must enter the data required to build the one instruction loop and data field desired. This data must be entered in the following manner after the control option code.

- a. M for Move mode
L for Load mode
K for Stack Ch 1
4 for Stack Ch 2
- b. % - Ch 1 @ - Ch 1
X - Ch 2 * - Ch 2
? - Ch 3 Unoverlap \$ - Ch 3 Overlap
! - Ch 4 # - Ch 4
0, 1, or 2 for Stack
- c. 1 Reader
4 Punch
- d. 0, 1, 2 Reader Pocket
0, 4, 8 Punch Pocket
9 Read and No Stack
- e. W for Write
R for Read
- f. R Ch 1
X Ch 2
3 Ch 3
1 Ch 4
- g. Data Field to be used if punching ending with a word mark-group mark

NOTE: When using this option the CE should be aware of the limitations on the number of characters with word marks versus the mode used. Once the program enters this loop, the Inquiry Request must be used to exit from the loop. Then another option must be selected, most likely the continue option would be selected. No errors are indicated while in this loop.

6. Restart at Desired Memory Location - This allows the CE to begin at any point in the program by entering the memory location at which the restart is desired. To restart a program from the beginning, always enter 02000.
7. Continue from Point Where Program was Interrupted - This allows the CE to cause the program to continue in a normal fashion after interrupting it for looping purposes or accidentally pressing the Inquiry Request.

The program control options described here are available when Special TAD0=1 and should be used as much as possible for aids in troubleshooting.

When TAD 1 = 1 (request action after error), the CE may take any of the control options available by using the procedures outlined here after an error has occurred.

5.00.02.0 OPERATING HINTS

READ AND UNDERSTAND THE PROGRAM WRITE-UP

- 02.1 Only a Punch or only a Reader may be tested by making it the only ready unit.
- 02.2 Alter Special TAD 0 (Memory Loc. 01004) to 1 using the Standard Program Alter Procedures. Special TAD 0 = 1 makes the 7 program options available.
- 02.3 When operating with the Special TAD 0 = 1 the following should be kept in mind.
 - A. The alter memory option and loop a routine option could be used to alter a routine for some condition and then loop on the routine altered for troubleshooting the bug.
 - B. Several options may be selected sequentially by pressing Inquiry Request immediately after pressing Release for a selected option.
 - C. To restart a program from the beginning, use option 6 and a starting address of 02000.
- 02.4 The programs in this package require Machine Preparation before the program is run. Be certain these preparations are made.

5.00.03.0 PROGRAM STOPS & RESTARTS

03.1 ERROR HALTS

THERE ARE NO ERROR HALTS IN RP01.

03.2 NORMAL HALTS

Mem Loc.	Reason
04480	Allow CE to Unload Punch Pockets
04619	Allow CE to Reload Cards in Punch
04751	Allow CE to Unload Punch Pockets and load Punch
04909	Allow CE to check for cards in Punch Pockets
05681	Allow CE to remove cards from Punch Pockets
07187	Allow CE to load Test Decks in Reader
08349	Allow CE to reload cards in Reader

.03.3 AUTOMATIC RESTART PROCEDURE

By setting the check control switch on the console-CE-Test-Panel to Reset and Restart, the programs will automatically restart after a 1410/7010 alarm condition. This can be used to great advantage when looping a routine or instruction which is causing an alarm condition. Furthermore, this technique can be used to insure that once a program is started, it may be left unattended without fear of stopping because of alarms.

MANUAL RESTART PROCEDURE

If the check control switch is not used and an alarm condition is encountered, the program can be made to continue by pressing Computer Reset and Start.

5.00.04.0 LOADING PROCEDURE

USE STANDARD DIAGNOSTIC LOADING PROCEDURES
(Refer to 1410/7010 INTRODUCTORY MATERIAL)

5.00.05.0 ERROR MESSAGES

The error messages used are designed to give the maximum data available about the error that occurred. All error messages will be given on the Console Typewriter. The following is a description of the Error Message Format.

- a. All errors will be preceded by "ROUTINE N00." This identifies the failing routine.
- b. All status errors, errors indicating status condition on the I/O device, will appear in this format:

*Error 00000 M%F099999W 1248AB

1) 2) 3) 4)

- 1) Error Flag
- 2) Starting address of failing routine
- 3) Failing instruction
- 4) Status indicator that was on

1 Not ready
2 Busy
4 Data Check
8 Ext. Cond.
A No transfer
B Wrong length record

- c. All program detected errors, errors other than status errors, will appear in the following format. Refer to program listing for explanation of error.

*Error 01 02 00000

1) 2) 3)

- 1) Error Flag
- 2) Error (s) detected during routine
- 3) Starting address of failing routine

- d. Combinations of status errors and program detected errors will appear in this format:

*Error 01 00000 M%F099999W 1248AB

- e. Any data which may be pertinent to the error, i.e., Data Field used, may appear as the third line of the error message. This is not standard and will be given only as required.
- f. If Special TAD 0 = 1 and TAD 1 = 1 (request loop after error), the following will appear; it will be the last line of the error message.

REQ ERROR ACTION

- g. The maximum error message would look like this:

ROUTINE N00

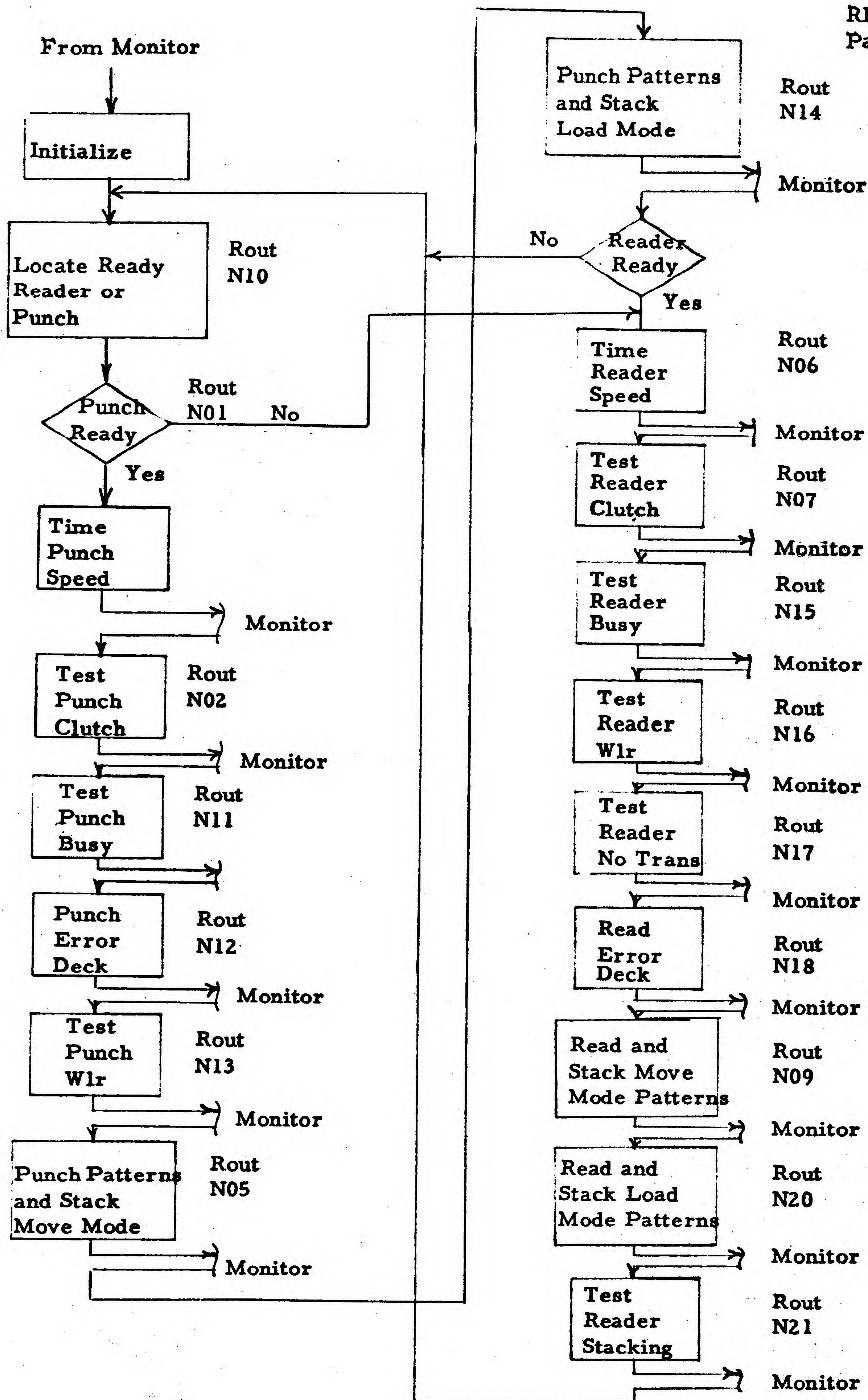
*Error 01 00000 M%F099999W 1248AB

PERTINENT DATA

REQ ERROR ACTION

5.00.06.0 FLOW CHARTS

The following Flow Chart is designed to give a general picture of the test routine's relationship to one another.



5.00.07.0 ROUTINE/ERROR INDEX

TO LOCATE ROUTINES AND ERRORS IN THE PROGRAM
LISTING

Routine Number	Error Number	Page
N01		33
N02		34
N11	01	36
N12		37
N13	03, 04	39
N05	05	40, 42
	06	42
N14	07	43, 44
	08	44
N06		46
N07		47
N15	09	49
N16	10	50
	11	50
N17	12	51
	13	51
N18	14	52
N09	15	53, 54
	16	54
	17	54
	18	54
	19	55
N20	20	56
	21	56
	22	57
	23	57
	24	57
	25	58
N21	26	59
	27	60

CT ADDR INSTRUCTION

I/O DICOST TADS
OPCODE OPERAND

LABEL

PGLIN

1002

1003

1004

1005

1006

1007

1008

1009

1010

1011

1012

1013

1014

1015

1016

1017

1018

1019

1020

1021

1022

1023

CTL 2

DEFINE STANDARD TADS

ORG 1000

DCW

TAD0

TAD1

TAD2

TAD3

DEFINE SPECIAL TADS

DCW

SPTAD0

SPTAD1

SPTAD2

SPTAD3

SPTAD4

SPTAD5

SPTAD7

SPTAD8

SPTAD9

#

01000

1

01000

1

01001

1

01002

1

01003

1 01004

1

01005

1

01006

1

01007

1

01008

1

01009

1

01010

1

01011

1

01012

I/O DICOST ONE INSTRUCTION LOOP

RP01 PAGE 15

CT ADDR INSTRUCTION

OPCOD OPERAND

LABEL

PGLIN

```

1025 $      *** I/O DICOST PROGRAM ***
1026 $      *** ONE INSTRUCTION LOOP ROUTINE ***
1027 $      WHEN THE CE SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028 $      SIN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED. NOTE THAT THE
1029 $      BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030 LOOP    MU      X11.0,R      I/O INST BEING LUP 0
1031      BAI      *E1
1032      BNQ      PRGCTL      BRCH ON INQ TO PRGCL
1033      B        LOOP      CONTINUE TO LOOP
1034      H
1035      #

```

10	01013	M	X11	00000	R
7	01023	R	01030	M	
7	01030	J	02299	Q	
7	01037	J	01013		
1	01044	.			

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1037	\$	***	I/O DICOST PROGRAM ***			
1038	\$	***	CHANNEL ALTER ROUTINE ***			
1039	\$		THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS, BRANCH-ON-STATUS-			
1040	\$		INDICATOR-ON INSTRUCTIONS, AND BRANCH ON CHANNEL OVERLAP IN PRO-			
1041	\$		CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED. THIS IS DONE			
1042	\$		BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRU-			
1043	\$		CTIONS.			
1044	\$					
1045	CHALTR	SBR	X5	7	01045	G 00049 B
1046		MLCA	9EX5, X7	12	01052	D 00+9 00059 T
1047	SCAN	SCNLA	0EX6, 0EX6	12	01064	D 00+0 00+0 B
1048		SAR	X6	7	01076	G 00054 A
1049		C	X6, X7	11	01083	C 00054 00059
1050		BH	13EX5	7	01094	J 00+/3 U
1051		MLCS	1EX6, *E12	12	01101	D 00+.1 01124 3
1052		BCE	MLORU, CODES,	12	01113	B 01149 02624
1053		BCE		1	01125	B
1054		BCE		1	01126	B
1055		BCE	RX3OR1	6	01127	B 01168
1056		BCE		1	01133	B
1057		BCE		1	01134	B
1058		BCE		1	01135	B
1059		BCE	JAY	6	01136	B 01187
1060		A	SCAN	7	01142	J 01064
1061	MLORU	MLCS	10EX5, 2EX6	12	01149	D 00+/0 00+.2 3
1062		B	SCAN	7	01161	J 01064
1063	RX3OR1	MLCS	11EX5, 1EX6	12	01168	D 00+/1 00+.1 3
1064		B	SCAN	7	01180	J 01064
1065	JAY	MLCS	7EX6, *E12	12	01187	D 00+.7 01210 3
1066		BCE	ONE234, MODS,	12	01199	B 01221 02628
1067		BCE		1	01211	B
1068		BCE		1	01212	B
1069		BCE		1	01213	B
1070		B	SCAN	7	01214	J 01064
1071	ONE234	MLCS	12EX5, 7EX6	12	01221	D 00+/2 00+.7 3

I/O DICOST CHANNEL ALTER

CT ADDR INSTRUCTION

GO FIND NEXT OPER

PGLIN

LABEL

OPCOD OPERAND

B SCAN

H

7 01233 J 01064

1 01240 .

1072

1073

1074

1075

1076

1077

1078

1079

1080

1081

1082

1083

1084

1085

1086

1087

1088

1089

1090

1091

1092

1093

1094

1095

1096

1097

1098

1099

1100

1101

DEFINE SYSTEM & CHANNEL CONTROL CARDS

ORG 1233

DCW @RM5PM7RJKPJM503*92

DEFINE PROGRAM TITLE

..

ORG 1250

DCW @RP01A2.G

5 01254

LOCATE THE SYSTEM & CHANNEL CARDS

ORG 1256

DC a

ORG 1289

DC a

ORG 1346

DC a

ORG 1403

DC a

ORG 1460

DC a

50 01256

7 01312

50 01289

7 01345

50 01289

7 01346

50 01346

7 01402

50 01403

7 01459

50 01460

7 01516

#

CT

ADDS

INSTRUCTION

```

1103 $ *** I/O DICOST PROGRAM ***
1104 $ *** TYPE AND REQUEST FOR INTERVENTION ***
1105 $ THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR
1106 $ MANUAL INTERVENTION.THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON
1107 $ DATA FIELD,OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE
1108 $ BRANCH INSTRUCTION TO THIS ROUTINE.IF A REPLY IS REQUIRED A READ
1109 $ CONSOLE PRINTER OPERATION IS ISSUED.THIS ROUTINE IS USED TO TYPE
1110 $ ALL MESSAGES IN THIS PROGRAM.
1111 $

```

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDS	INSTRUCTION
1112	TYPES	SBR	TYPXIT65	7	01517	G 01591 B
1113	TYPE	WCP	201	10	01524	M 010 00201 M
1114		BCB1	TYPE	7	01534	R 01524 2
1115		BA1	001	7	01541	R 01548 M
1116	SW11	NCPWM		1	01548	N
1117	LAB60	RCP	0	10	01549	M 010 00000 R
1118		BEX1	0-16,M	7	01559	R 01549 M
1119		BA1	001	7	01566	R 01573 M
1120		CW	SW1161	6	01573	0 01549
1121		CS	330	6	01579	/ 00330
1122		CS		1	01585	/
1123	TYPXIT	B	0	7	01586	J 00000
1124	TYPI	SBR	X1	7	01593	G 00029 B
1125		B	0014	7	01600	J 01620
1126	TYP2	SBR	X1	7	01607	G 00029 B
1127		SW	REPLY01	6	01614	0 01652
1128		WCP	00X1	10	01620	M 010 00000 M
1129		SBR	X1	7	01630	G 00029 B
1130		BCB1	0-23	7	01637	R 01620 2
1131		BA1	001	7	01644	R 01651 M
1132	REPLY	NCPWM		1	01651	N
1133		B	RDCON	7	01652	J 01666
1134		B	00X1	7	01659	J 00000
1135	RDCON	RCP	00X1	10	01666	M 010 00000 R
1136		SBR	X1	7	01676	G 00029 B
1137		BEX1	0-23,M	7	01683	R 01666 M

PGLIN	LABEL	I/O DDCOST TYPE	OPCOO	OPERAND	CT	ADDRS	INSTRUCTION
1138		BAL		*E1	7	01690	R 01697 M
1139		CW		REPLYE1	6	01697	D 01652
1140		B		OCXI	7	01703	J 000*0
1141	DATA	MLCWS		222,PASS1	12	01710	D 09821 01944 7
1142		BCE		*E13,1264,1	12	01722	B 01746 01264 1
1143		MLCWS		222,MONITRGT	12	01734	D 09821 02073 7
1144		MRCWG		*C9,1230	12	01746	D 01766 01230 L
1145		B		PASS1G7	7	01758	J 01951
1146		H			1	01765	.
1147		DC		2.732	3	01768	
1148		DCW		2JA	1	01769	
1149		DC		SCAN	5	01774	01064
1150		DC		2 2	1	01775	
1151		DCW		2.2.G	1	01776	
1152		DS		12		01789	

RETURN
 RESET FIRST PASS INST
 BRCH IF PRIORITY AVAILABLE
 ALTER PRIORITY INST TO NO-OP
 RESTORE CHANNEL ALTER ROUTINE
 RETURN TO NORMAL INITIALIZE

*** ERROR TABLES THESE ARE USED FOR ERROR ***

*** SUMMARIES AND ERROR IDENTIFICATION ***

PGLIN	LABEL	STPTAB	OPCOO	OPERAND	CT	ADDRS	INSTRUCTION
1157			ORG	*EX00		01800	
1158			ORG	*E1		01801	
1159			DCW	2L2	1	01801	
1160		E1	DC	2 2	1	01802	
1161		E2	DC	2 2	1	01803	
1162		E3	DC	2 2	1	01804	
1163		E4	DC	2 2	1	01805	
1164		E5	DC	2 2	1	01806	
1165		E6	DC	2 2	1	01807	
1166		E7	DC	2 2	1	01808	
1167		E8	DC	2 2	1	01809	
1168		E9	DC	2 2	1	01810	
1169		E10	DC	2 2	1	01811	
1170		E11	DC	2 2	1	01812	
1171		E12	DC	2 2	1	01813	
1172		E13	DC	2 2	1	01814	
1173		E14	DC	2 2	1	01815	

PGLIN	LABEL	I/O DIOCT TYPE	OPCOD	OPERAND
1174	E15		DC	a a
1175	E16			a a
1176	E17			a a
1177	E18			a a
1178	E19			a a
1179	E20			a a
1180	E21			a a
1181	E22			a a
1182	E23			a a
1183	E24			a a
1184	E25		DC	a a
1185	E26		DC	a a
1186	E27			a a
1187	E28			a a
1188	E29			a a
1189	E30			a a
1190	E31			a a
1191	E32			a a
1192	E33			a a
1193	E34			a a
1194	E35			a a
1195	E36			a a
1196	E37			a a
1197	E38			a a
1198	E39			a a
1199	E40			a a
1200	E41			a a
1201	E42			a a
1202	E43			a a
1203	E44			a a
1204	E45			a a
1205	E46			a a
1206	E47			a a
1207	E48			a a
1208	E49			a a
1209	E50			a a

CT	ADDRS	INSTRUCTION
1	01816	
1	01817	
1	01818	
1	01819	
1	01820	
1	01821	
1	01822	
1	01823	
1	01824	
1	01825	
1	01826	
1	01827	
1	01828	
1	01829	
1	01830	
1	01831	
1	01832	
1	01833	
1	01834	
1	01835	
1	01836	
1	01837	
1	01838	
1	01839	
1	01840	
1	01841	
1	01842	
1	01843	
1	01844	
1	01845	
1	01846	
1	01847	
1	01848	
1	01849	
1	01850	
1	01851	

I/O DICOST TYPE

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1210	E51	DC	2 2	1	01852	
1211	E52		2 2	1	01853	
1212	E53		2 2	1	01854	
1213	E54		2 2	1	01855	
1214	E55		2 2	1	01856	
1215	E56		2 2	1	01857	
1216	ERRTAB	DC	2+2	1	01858	
1217		DC	2 2	1	01859	
1218	#					

I/O DICOST INITIALIZE ROUTINE

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1220	\$	***	INITIALIZE ROUTINE FOR THE DICOST PROGRAM ***			
1221	INITLE	WCP	1250	10	01860	M 310 01250 W
1222		BCBI	*-16	7	01870	R 01860 2
1223		BAI	*81	7	01877	R 01884 M
1224		CS	99	6	01884	/ 00099
1225		SW	25	6	01890	. 00025
1226		MLCS	2+2,100	12	01896	D 09822 00100 3
1227		MRWR	25,30	12	01908	D 00025 00030 2
1228		MRCWG	RESUME,1	12	01920	D 02015 00001 L
1229		MRCWG	INTR,101	12	01932	D 02007 00101 L
1230	PASS1	B	DATA	7	01944	J 01710
1231		CW	LPRT,SW1161	11	01951	D 02636 01549
1232		CS	E56	6	01962	/ 01857
1233		MLCWS	212,STPTAB	12	01968	D 09823 01801 7
1234		B	START	7	01980	J 03436
1235	#					
1236		H		1	01987	.
1237		ORG	2000		02000	
1238		B	INITLE	7	02000	J 01860
1239	\$	***	RESET & INTERRUPT ROUTINES, THESE ROUTINES ***			
1240	\$	***	ARE MOVED TO LOCATIONS 1 & 101			
1241	INTR	BNQ	PRGCTL	7	02007	J 02299 0
1242		DCW	212	1	02014	
1243	RESUME	B	CKLUP	7	02015	J 02023
1244		DCW	212	1	02022	
1245	CKLUP	BW	MONITR,LPRT	12	02023	V 02066 02636 1
1246		BW	LOOP,LPINST	12	02035	V 01013 02637 1
1247		MLNA	X3,X2	12	02047	D 00039 00034 /
1248		B	MONITR&7	7	02059	J 02073
1249	#					

CHECK FOR LOOP ROUT
CHECK INST LOOP SW
LOAD IX 2
GO TO MONITR

I/O DICOST MONITOR

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CT ADDR INSTRUCTION

PGLIN

LABEL

OPCODE OPERAND

```
1251 $      *** I/O DICOST PROGRAM ***
1252 $      *** MONITOR ROUTINE ***
1253 $ THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED,OR
1254 $A STATUS ERROR HAS BEEN DETECTED AND INDICATED.IN THE CASE OF A
1255 $STATUS ERROR MCNITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH
1256 $THE STATUS ERROR WAS DETECTED.WHEN ENTERED FROM THE END OF A
1257 $TEST ROUTINE MCNITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY,THE
1258 $ROUTINE IS BEING LOPEED,ANY ERRORS OCCURED ALTER ROUTINE SEQUENCE
1259 $IS SELECTED,OR THE NEXT SEQUENCIAL ROUTINE SHOULD BE RUN.
1260 $
1261 MONITR      SBR      X2      STORE ADDR
1262 BXPB      *E1      EXIT ALERT MODE
1263 BNQ      CHKTAD      BRCH ON INQ
1264 MONIT1      BW      OEX3,LPR1      RETURN IF LOOPING RT
1265 MONIT2      MLCWS      AMQ,224      SET WMGM SHORT MESH
1266 B      ERRCTL
1267 MONIT3      NOP
1268 MLCWA      X2,X3      LOAD IX3
1269 MLCWS      Q      Q,224      CLEAR WMGM
1270 B      OEX2      GO TO NEXT ROUTINE
1271 MLCWS      Q      Q,224      CLEAR WMGM
1272 BCE      *E8,OEX2,N      BRCH IF ROUT COMP
1273 B      OEX2      RETURN TO ROUTINE
1274 BZN      *E8,1EX2,2      BRCH IF CHAR IS NUMR
1275 B      OEX2      RETURN TO ROUTINE
1276 BZN      *E8,2EX2,2      BRCH IF CHAR IS NUMR
1277 B      OEX2      RETURN TO ROUTINE
1278 BW      MONIT3,3EX2      BRCH IF CHAR HAS WM
1279 B      OEX2      RETURN TO ROUTINE
1280 #
1281 CHKTAD      BCE      PRGCIL,1004,1      BRCH IF SPECIAL TAD 0 IS A 1
1282 RCP      CTLFLD      READ CONSOLE PRINTER
1283 BEX1      *-16,M      BRCH ON ANY BUT WLR
1284 BAI      *E1
1285 SW      CTLFLD
1286 MLCA      CTLFLDQ4,ALTMEMQ20 MOVE ADDRESS ENTERED
```

CT	ADDR	INSTRUCTION
7	02066	G 00034 B
7	02073	Y 02080 X
7	02080	J 02238 Q
12	02087	V 000M0 02636 I
12	02099	D 09824 00224 7
7	02111	J 02694
1	02118	N
12	02119	D 00034 00039 X
12	02131	D 09825 00224 7
7	02143	J 000.0
12	02150	D 09825 00224 7
12	02162	B 02181 000.0 N
7	02174	J 000.0
12	02181	V 02200 000.1 2
7	02193	J 000.0
12	02200	V 02219 000.2 2
7	02212	J 000.0
12	02219	V 02118 000.3 1
7	02231	J 000.0
12	02238	B 02299 01004 1
1C	02250	M XTO 00201 R
7	02260	R 02250 M
7	02267	R 02274 H
6	02274	, 00201
12	02280	D 00205 02481 I

PGLIN LABEL

[illegible]

1287

B **ALTMEN 12**

GO RESPOND TO REQUEST

7 02292 J 02473

I/O DICOST PROGRAM CONTROL

RP01 PAGE 25

PGLIN	LABEL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
1289	\$	***	I/O DICOST PROGRAM ***			
1290	\$	***	PROGRAM CONTROL ***			
1291	\$		WHEN THE CE PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION			
1292	\$		THIS ROUTINE IS ENTERED.THE CE ENTERS ON THE TYPEWRITER THE			
1293	\$		OPTION CODE DESIRED,ALONG WITH THE DATA NEEDED BY THE OPTION.THE			
1294	\$		ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES			
1295	\$		THE OPTION.			
1296	\$					
1297	PRGCTL	RCPW	CTLFLD	10	02299	L XTO 00201 R
1298		SBR	X1	7	02309	G 00029 B
1299		BEX1	PRGCTL,M	7	02316	R 02299 M
1300		SW	CTLFLD&1	6	02323	, 00202 G
1301		BAL	&E1	7	02329	R 02336 M
1302		CW	LPRT,LPINST	11	02336	B 02636 02637
1303		MLWS	&E1	12	02347	D 02358 01802 4
1304		MRWR	E1,E2	12	02359	D 01802 01803 2
1305		MLCS	CTLFLD,&E12	12	02371	D 00201 02394 3
1306		BCE	ENDTST,CTLCD,	12	02383	B 09177 02635
1307		BCE	ALTADS	6	02395	B 02438
1308		BCE	ALTMEM	6	02401	B 02461
1309		BCE	LUPRT	6	02407	B 02520
1310		BCE	ONELUP	6	02413	B 02549
1311		BCE	RSTART	6	02419	B 02583
1312		BCE	CONT	6	02425	B 02606
1313		B	PRGCTL	7	02431	J 02299
1314	ALTAOS	MLCA	CTLFLD&4,1003	12	02438	D 00205 01003 T
1315		CS	MONIT1,299	11	02450	/ 02087 00299
1316	ALTMEM	MLCA	CTLFLD&5,&E9	12	02461	D 00206 02481 T
1317		RCPW	0	10	02473	L XTO 00000 R
1318		BEX1	&--16,M	7	02483	R 02473 M
1319		BAL	&E1	7	02490	R 02497 M
1320		CS	MONIT1,299	11	02497	/ 02087 00299
1321	ALTSEQ	MLCWS	&M&,O&X1	12	02508	D 09824 000+0 7
1322	LUPRT	SW	LPRT	6	02520	, 02636
1323		MLNA	CTLFLD&5,X2	12	02526	D 00206 00034 /
1324		CS	MONIT2,299	11	02538	/ 02099 00299

I/O DICOST PROGRAM CONTROL

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1325	ONELUP	SW	LPINST	6	02549	02637
1326	LUPINT	NOPWM		1	02555	N
1327		B	*68	7	02556	J 02570
1328		B	PREP	7	02563	J 09209
1329		CW	LUPINT&1	6	02570	02556
1330		B	LOOP	7	02576	J 01013
1331	RSTART	MLNA	CTLFLD&5.X2	12	02583	D 00206 00034 /
1332		CS	MONIT2.299	11	02595	/ 02099 00299
1333	CONT	CS	WHERE2.299	11	02606	/ 02150 00299
1334	#					
1335			I/O DICOST CONSTANTS			
1336	CODES	DCW	0J13XRULM0	8	02624	
1337	MODS	DCW	043210	4	02628	
1338		DCW	070	1	02629	
1339		DC	060	1	02630	
1340			050	1	02631	
1341			040	1	02632	
1342			020	1	02633	
1343			010	1	02634	
1344	CTLCOD		00	1	02635	
1345	LPRT	DC	00	1	02636	
1346	LPINST	DC	00	1	02637	
1347	ADDR02	DCW	ERRTAB	5	02642	01858
1348	ERR	DCW	0*ERROR0	6	02648	
1349	ACTION	DC	0REQ ERROR ACTION0.G	16	02649	
1350	ERCODE	DCW	0547P0	4	02669	
1351	SAVIND	DCW	01 2 4 8 A B0.G	11	02670	
1352	STIND	DC	01 2 4 8 A B0.G	11	02682	
1353	#					

I/O DICOST ERROR CONTROL

CT ADDR INSTRUCTION

PGLIN

LABEL

OPCOD OPERAND

1355 \$ *** I/O DICOST PROGRAM ***
 1356 \$ *** ERROR CONTROL ***
 1357 \$ THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-
 1358 SED ERRORS HAVE TO BE INDICATED, IF THERE ARE THIS ROUTINE BUILDS
 1359 \$THE ERROR MESSAGE AND HAS IF TYPED OUT. THIS ROUTINE ALSO CHECKS
 1360 \$TAD 1 TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.
 1361 \$

LOCATE FAILING INST

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1364	ERRCTL	MLCA	X2,X5	12	02694	D 00034 00049 T
1365		S	212,X5	11	02706	S 09826 00049 S
1366		SCNLA	06X5,06X5	12	02717	D 00040 00040 B
1367		SAR	X5	7	02729	G 00049 A
1368		MLCS	16X5,0612	12	02736	D 00041 02759 3
1369		BCE	GOTONE,GOODES,	12	02748	B 02792 02624
1370		BCE		1	02760	B
1371		BCE	SHORT1	6	02761	B 02811
1372		C	X3,X5	11	02767	C 00039 00049
1373		BL	LOCFLD	7	02778	J 02835 T
1374		B	ERRCTL&12	7	02785	J 02706
1375	GOTONE	MLCWA	106X5,LOOP&9	12	02792	D 00040 01022 X
1376		B	LOCFLD	7	02804	J 02835
1377	SHORT1	MLCWA	56X5,LOOP&9	12	02811	D 00045 01022 X
1378		MLCS	222,LOOP	12	02823	D 09821 01013 3
1379						INSTRUCTION
1380	LOCFLD	MLCA	LOOP&9,234	12	02835	D 01022 00234 T
1381		MLNA	X3,223	12	02847	D 00039 00223 /
1382		ZA	ADDR02,X1	11	02859	M 02642 00029
1383		ZA	2002092,X5	11	02870	M 09831 00049
1384			SCAN ERROR TABLE & UPDATA ERROR COUNT			
1385	ERSCAN	SCNLA	06X1,06X1	12	02881	D 00040 00040 S
1386		SAR	X1	7	02893	G 00029 A
1387		BCE	AFTSRH,16X1,1	12	02900	B 02959 00041 L
1388		SW	X1-1	6	02912	, 00028
1389		MLNWA	X1,06X5	12	02918	D 00029 00040 V
1390		A	232,X5	11	02930	A 09832 00049

I/O DICOST ERROR CONTROL

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1391			NINE TIMES			
1392		CW	1&X1,X1-1	11	02941	000+1 00028
1393		B	ERSCAN	7	02952	J 02881
1394			LOAD PRINT FIELD WITH ERROR MSG			
1395	AFTSRH	BCE	WHERE2,1000,1	12	02959	B 02150 01000 1
1396	ERROSH	NCP		1	02971	N
1397		BCE	WHERE2,209	12	02972	B 02150 00209
1398		SW	ERROSH&1	6	02984	, 02972
1399		MLCA	ERR,206	12	02990	D 02648 00206 T
1400		MLCA	2&X3,ROUTID	12	03002	D 000M2 03031 T
1401		B	TYPI	7	03014	J 01593
1402		DCH	ROUTINE 2	8	03028	
1403	ROUTID	DC	2 2,G	3	03031	
1404		B	TYMES	7	03033	J 01517
1405			TYPE ADDITIONAL ERROR INFORMATION			
1406	EXTRA	NOPWM		1	03040	N
1407		WCP	DATA	10	03041	M 210 01710 W
1408		BCB1	*-16	7	03051	R 03041 2
1409		BA1	*E1	7	03058	R 03065 M
1410		CW	EXTRA&1	6	03065	0 03041
1411	ACT	BCE	*E8,1001,1	12	03071	B 03090 01001 1
1412		B	WHERE2	7	03083	J 02150
1413		SW	LUPINT&1	6	03090	, 02556
1414		MRCWG	ACTION,201	12	03096	D 02649 00201 L
1415		B	TYMES	7	03108	J 01517
1416		B	PRGCTL	7	03115	J 02299
1417	#					
1418	\$		*** I/C DICOST PROGRAM ***			
1419	\$		*** DETERMINE WHICH STATUS INDICATORS ARE ON ***			
1420	\$		\$ THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON,ON THE			
1421	\$		\$CHANNEL BEING USED.THE INDICATORS FOUND ON ARE STORED IN THE			
1422	\$		\$PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.			
1423	STACHK	SBR	X5	7	03122	G 00049 B
1424		SBR	X2	7	03129	G 00034 B
1425		BW	0&X2,LPRT	12	03136	V 000.0 02636 1

I/O DICOST ERROR CONTROL

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1426		S	272,X5	11	03148	S 09833 00049
1427		MLCS	0EX5,LOOP&10	12	03159	D 00+*0 01023 3
1428		MRCWG	STIND,237	12	03171	D 02682 00237 L
1429		MLCS	0EX5,NUOPCO	12	03183	D 00+*0 03213 3
1430		B	CHALTR	7	03195	J 01045
1431		DCW	CNTERR	5	03206	03368
1432		DC	NOTROY	5	03211	03226
1433		DCW	2 2	1	03212	
1434	NUOPCO	DC	2 2	1	03213	
1435		DC	2 2	1	03214	
1436		ZA	2002372,X5	11	03215	Q 09838 00049
1437	NOTROY	NCP		1	03226	N
1438		BNRI	CNTERR	7	03227	R 03368 1
1439		B	UPIX	7	03234	J 03399
1440	BUSY	NCP		1	03241	N
1441		BCB1	CNTERR	7	03242	R 03368 2
1442		B	UPIX	7	03249	J 03399
1443		NOP		1	03256	N
1444		BER1	CNTERR	7	03257	R 03368 4
1445		B	UPIX	7	03264	J 03399
1446	EXTCND	NOP		1	03271	N
1447		BEF1	CNTERR	7	03272	R 03368 8
1448		B	UPIX	7	03279	J 03399
1449	NOTRNS	NCP		1	03286	N
1450		BNT1	CNTERR	7	03287	R 03368 8
1451		B	UPIX	7	03294	J 03399
1452	WLR	NOP		1	03301	N
1453		BW11	CNTERR	7	03302	R 03368 -
1454		B	UPIX	7	03309	J 03399
1455		SW	NOTROY&1,BUSY&1	11	03316	, 03227 03242
1456		SW	DATA&1,EXTCND&1	11	03327	, 03257 03272
1457		SW	NOTRNS&1,WLR&1	11	03338	, 03287 03302
1458		MRCG	237,SAVIND	12	03349	D 00237 02670 5
1459		B	ERRCTL	7	03361	J 02694
1460	CNTERR	SBR	X6	7	03368	G 00054 B
1461		A	272,X6	11	03375	A 09833 00054

I/O DICOST ERROR CONTROL

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PGLIN	LABEL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
1462		CW	ERROSW61	6	03386	02972
1463		B	UPIX619	7	03392	J 03418
1464	UPIX	SBR	X6	7	03399	G 00054 B
1465		HLCS	2 2,0EX5	12	03406	D 09825 00*0 3
1466		A	222,X5	11	03418	A 09839 00049
1467		B	0EX6	7	03429	J 00*0
1468						
1469						
1470	CTLFLD	EQU	201			
1471		PST				

TURN OFF ERROR SW

STORE RETURN ADDR

REMOVE STATUS CHAR

UPDATE IND REG 5

RETURN TO PROGRAM

INITIALIZE FOR RP01

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1473	START	CW	READSW61, PCHSW61	11	03436	06275 03721
1474		CW	GOSW61, PCHER461	11	03447	08982 05622
1475		CW	ERRDCK61	6	03458	04436
1476		S	CNTCRD	6	03464	S 09370
1477		S		1	03470	S
1478		S		1	03471	S
1479		S		1	03472	S
1480		S		1	03473	S
1481		S		1	03474	S
1482		S		1	03475	S
1483		S		1	03476	S
1484		BCE	C1410, 1256, 0	12	03477	B 03562 01256 0
1485		BCE	C14101, 1256, 1	12	03489	B 03623 01256 1
1486		MLCA	LOOPX, LOOPTI	12	03501	D 09631 09362 1
1487		MLCA	DELAYX, DELAY	12	03513	D 09640 09373 1
1488		MLCA	TERM4X, TERM4	12	03525	D 09712 09397 1
1489		MLCA		1	03537	D
1490		MLCA		1	03538	D
1491		MLCA		1	03539	D
1492		MLCA	TRM8XR, TERM8	12	03540	D 09784 09808 1
1493		MLCA		1	03552	D
1494		MLCA		1	03553	D
1495		MLCA		1	03554	D
1496		B	GETSET	7	03555	J 03677
1497	C1410	MLCA	LOOP0, LOOPTI	12	03562	D 09625 09362 1
1498		MLCA	DELAY0, DELAY	12	03574	D 09634 09373 1
1499		MLCA	TERM40, TERM4	12	03586	D 09664 09397 1
1500		MLCA		1	03598	D
1501		MLCA		1	03599	D
1502		MLCA		1	03600	D
1503		MLCA	TRM80R, TERM8	12	03601	D 09736 09808 1
1504		MLCA		1	03613	D
1505		MLCA		1	03614	D
1506		MLCA		1	03615	D
1507		B	GETSET	7	03616	J 03677

RESET ALL SWITCHES

RESET CONUTERS

BRCH IF THIS IS A 1410

BRCH IF THIS IS A 14101

PREPARE

TIMING

CONSTANTS

FOR

A

7010

PREPARE

TIMING

CONSTANTS

FOR A 7010

PREPARE

TIMING

CONSTANTS

FOR

A

7010

INITIALIZE FOR RP01

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1508	C14101	MLCA	LOOPTI	12	03623	D 09628 09362 T
1509		MLCA	DELAYI, DELAY	12	03635	D 09637 09373 T
1510		MLCA	TERM41, TERM4	12	03647	D 09688 09397 T
1511		MLCA		1	03659	D
1512		MLCA		1	03660	D
1513		MLCA		1	03661	D
1514		MLCA	TRM8IR, TERM8	12	03662	D 09760 09808 T
1515		MLCA		1	03674	D
1516		MLCA		1	03675	D
1517		MLCA		1	03676	D
1518	GETSET	ZA	EN10, X3	11	03677	M 09844 00039
1519		ZA	2000002, X14	11	03688	M 09849 00094
1520		ZA	2013012, X15	11	03699	M 09854 00099
1521		B	36EX3	7	03710	J 000C6

PREPARE

TIMING

CONSTANTS

FOR

A

7010

LOAD IX REG 3

LOAD IX 14

LOAD IX 15

CT ADDR INSTRUCTION

MACHINE SPEED
OPCOD OPERAND

PGLIN

LABEL

*** TIME THE PUNCH FOR ONE MINUTE ***

1523

1524

THIS ROUTINE DETERMINES THE MAXIMUM SPEED OF THE PUNCH IN CARDS
PER MINUTE. THIS IS DONE BY LOOPING FOR ONE MINUTE WHILE PUNCHING
BLANK CARDS--THE CARDS MAY BE USED AGAIN--AND COUNTING THE CARDS
PUNCHED. WHEN THE MINUTE IS UP THE NUMBER OF CARDS PUNCHED IS TYPED
OUT. A POOR RESULT INDICATES POSSIBLE MECHANICAL PROBLEMS EXIST OR
ARE DEVELOPING.

1530

1531

NO1

NCP

2010

ROUTINE ID

PCHSW

NOPWM

B N05XIT

CS PCHFLD&79

S ACCUM

BAV *E1

S MINUTE

S PCRDCI

P O,PCHFLD

BCBI COUNT1

BNRI N01XIT

BA1 *E1

A 20010,PCRDCI

A 28802,ACCUM

BAV ONESEC

B PASPCH

A LOOPTI,ACCUM

BAV *E8

B PASPCH

ONESEC

A 212,MINUTE

BCE *E8,MINUTE-1,6

B PASPCH

A 212,PCRDCI

MLNA PCRDCI,PSPDMG&13

B TYPI

1 03717 N

2 03719

1 03720 N

7 03721 J 05522

6 03728 / 09979

6 03734 S 09354

7 03740 J 03747 Z

6 03747 S 09359

6 03753 S 09357

10 03759 M 240 09900 W

7 03769 R 03826 2

7 03776 R 03930 1

7 03783 R 03790 M

11 03790 A 09857 09357

11 03801 A 09860 09354

7 03812 J 03851 Z

7 03819 J 03759

11 03826 A 09362 09354

7 03837 J 03851 Z

7 03844 J 03759

11 03851 A 09826 09359

12 03862 B 03881 09358 6

7 03874 J 03759

11 03881 A 09826 09357

12 03892 D 09357 03924 /

7 03904 J 01593

CT ADDR INSTRUCTION

18 03911
7 03930 J 02066

MACHINE SPEED
OPCDD OPERAND

DCW 3PCH SPD IS /MIN2.G
B MONITR

LABEL

PSPDMG
NOIXIT

PGLIN

1558
1559

CT ADDR INSTRUCTION

CLUTCH TEST
OPCD OPERAND

PGLIN LABEL

*** AGGRAVATE CLUTCH ENGAGEMENT **

THIS TEST SIMULATES THE WORST CASE ENGAGEMENT SITUATION FOR THE
CLUTCH BY ISSUING PCH OPS AS CLOSE TO LATCH-UP TIME AS POSSIBLE.
THIS IS DONE WITH DELAYS WHICH ALLOW 180,360,540,AND 720 DEGREES
BETWEEN PUNCH OPS.FAILING CONDITION FOR THIS TEST WILL RE A PUNCH
STOP.

1561		NCP			1 03937	N
1562						
1563						
1564		CS	PCHFLD&79	CLEAR PUNCH FLD	6 03938	/ 09979
1565		S	ACCUM	RESET	6 03944	S 09354
1566		P	0,PCHFLD	PASS A CARD	10 03950	M &40 09900 W
1567						
1568	N02					
1569		BCB1	--16		7 03960	R 03950 2
1570	LATCH	BA1	&E1		7 03967	R 03974 M
1571		P	0,PCHFLD	PASS A CARD	10 03974	M &40 09900 W
1572		BCB1	--16		7 03984	R 03974 2
1573		BA1	&E1		7 03991	R 03998 M
1574		BNR1	STACHK	BRCH NOT READY	7 03998	R 03122 1
1575	DELAY1	A	DELAY,ACCUM	ADD DELAY LOOP TIME TO ACC	11 04005	A 09373 09354
1576		C	ACCUM,TERM1	IS IT TIME TO TERMINATE THE DELAY	11 04016	C 09354 09379
1577		BL	&E8	IF SO BRCH	7 04027	J 04041 T
1578		B	DELAY1		7 04034	J 04005
1579		S	ACCUM	RESET ACCUMULATOR	6 04041	S 09354
1580		P	0,PCHFLD	PASS A CARD	10 04047	M &40 09900 W
1581		BCB1	--16		7 04057	R 04047 2
1582		BA1	&E1		7 04064	R 04071 M
1583		BNR1	STACHK	BRCH NOT READY	7 04071	R 03122 1
1584	DELAY2	A	DELAY,ACCUM	ADD DELAY TO ACCUM	11 04078	A 09373 09354
1585		C	ACCUM,TERM2	IS IT TIME TO TERMINATE	11 04089	C 09354 09385
1586		BL	&E8	IF SO BRCH	7 04100	J 04114 T
1587		B	DELAY2		7 04107	J 04078
1588		S	ACCUM	RESET ACCUMULATOR	6 04114	S 09354
1589		P	0,PCHFLD	PASS A CRD	10 04120	M &40 09900 W
1590		BCB1	--16		7 04130	R 04120 2
1591		BA1	&E1		7 04137	R 04144 M
1592		BNR1	STACHK	BRCH ON NOT READY	7 04144	R 03122 1
1593	DELAY3	A	DELAY,ACCUM	ADD DELAY TO ACCUM	11 04151	A 09373 09354

PGLIN	LABEL	CLUTCH TEST OPCOD OPERAND	CT	ADDRS	INSTRUCTION
1597		C ACCUM,TERM3	11	04162	C 09354 09391
1598		BL *E8	7	04173	J 04187 T
1599		B DELAY3	7	04180	J 04151
1600		S ACCUM	6	04187	S 09354
1601		P O,PCHFLD	10	04193	M X40 09900 W
1602		BCB1 *-16	7	04203	R 04193 Z
1603		BA1 *E1	7	04210	R 04217 M
1604		BNR1 STACHK	7	04217	R 03122 I
1605	DELAY4	A DELAY,ACCUM	11	04224	A 09373 09354
1606		C ACCUM,TERM4	11	04235	C 09354 09397
1607		BL *E8	7	04246	J 04260 T
1608		B DELAY4	7	04253	J 04224
1609		A 212,TENCNT	11	04260	A 09826 09368
1610		BZ *E8	7	04271	J 04285 V
1611		B LATCH	7	04278	J 03944
1612	NO2XIT	B MONITR	7	04285	J 02066

IF SO BRCH

RESET ACCUMULATOR
PASS A CARD

BRCH ON NOT READY
ADD DELAY TO ACCUM
IS IT TIME TO TERMINATE
IF SO BRCH

ADD 1 TO TEN COUNTER
BRCH AFTER TENTH PASS
GO FOR ANOTHER PASS

RP01
CT ADDR INSTRUCTION

TEST PUNCH BUSY
OPCOD OPERAND

1614 *** SET BUSY ON PUNCH ***

1615

1616 THIS ROUTINE ISSUES TWO SUCCESSIVE PUNCH OPERATIONS AND CHECKS
1617 FOR BUSY ON THE SECOND OPERATION. IF BUSY IS NOT SET ERROR 1 IS
1618 INDICATED.

1619

1620 N11 NQP

1621 DC

ROUTINE ID

1622 CS PCHFLD&79

1623 P 4,PCHFLD

PASS A CARD

1624 BCB1 *-16

1625 BAI *E1

1626 P 4,PCHFLD

PASS A CARD

1627 BAI *E1

1628 BCB1 N11XIT

BRCH BUSY

1629 *** SET ERROR 1 ON ***

1630 SW E1

TURN ON ERROR IND

1631 TWO SUCCESSIVE PUNCH OPERATIONS DID NOT TURN ON BUSY

1632 N11XIT B MONITR

1	04292	N
2	04294	
6	04295	/ 09979
10	04301	M 244 09900 W
7	04311	R 04301 2
7	04318	R 04325 M
10	04325	M 244 09900 W
7	04335	R 04342 M
7	04342	R 04355 2
6	04349	* 01802
7	04355	J 02066

PGLIN	LABEL	PUNCH ERROR DECK OPCODE OPERAND	CT	ADDRS	INSTRUCTION
1670		BAL *E1	7	04533	R 04540 M ^G
1671		A 212,TENCNT	11	04540	A 09826 09368
1672		BCE *E8,TENCNT,4	12	04551	B 04570 09368 4
1673		B CLRPCH	7	04563	J 04516
1674		S TENCNT	6	04570	S 09368
1675		B TYP1	7	04576	J 01593
1676		DCW 2CLR PCH,LOAD CARDS FROM P-0 IN PCH2,G	34	04616	
1677		H			
1678	LDFLO2	MLCS 0EX12,PCHFLD039	1	04618	
1679		P 0,PCHFLD	12	04619	D 00M00 09939 3
1680		BCB1 *-16	10	04631	M 240 09900 W
1681		BNR1 ENDN12	7	04641	R 04631 2
1682		BAL LDFLO2012	7	04648	R 04715 1
1683	NEXCHR	A 212,X12	7	04655	R 04631 M ^G
1684		BCE *E8,0EX12,S	11	04662	A 09826 00084
1685		B LDFLO2	12	04673	B 04692 00M00 S
1686		CS PCHFLD070	7	04685	J 04619
1687		P 0,PCHFLD	6	04692	/ 09970
1688		BAL *-16	10	04698	M 240 09900 W
1689	ENDN12	B TYP1	7	04708	R 04698 M ^G
1690		DCW 2SAVE CRDS FROM P-0,LOAD PCH2,G	7	04715	J 01593
1691		H	27	04748	
1692	N12XIT	B MONITR	1	04750	
			7	04751	J 02066

CT ADDR INSTRUCTION

TEST WLR

PGLIN LABEL OPCOD OPERAND

1694 *** SET WLR ON PUNCH ***

1695

1696 THIS ROUTINE TURNS ON WLR BY ISSUING A PUNCH INSTRUCTION WITH A

1697 SHORT FIELD, IF WLR DOES NOT COME ON ERROR 3 IS INDICATED. A PUNCH

1698 OP WITH LONG FIELD IS TRIED AND WLR IS CHECKED, IF WLR IS NOT ON

1699 ERROR 4 IS INDICATED. THE ROUTINE ENDS BY REQUESTING THE CE TO

1700 CHECK THAT NO CARDS WERE PASSED WHEN PUNCHING WITH WLR.

1701

1702 N13 NCP

1703 DC 2132.

ROUTINE 10

1704 MLCWS 2MA, PCHFLD

SET PUNCH FIELD TO SHORT

1705 P 0, PCHFLD

PUNCH A CARD

1706 BCB1 --16

1707 BAI *E1

1708 BWL1 *E7

BRCH ON WRNG LGTH REC

1709 *** SET ERROR 3 ON ***

1710 SW E3

TURN ON ERROR IND

1711 A PUNCH WITH A DATA FIELD OF NO CHARS DOES NOT TURN ON WLR

1712 CS PCHFLD&80

CLEAR PUNCH FLD, FLD TO LONG

1713 P 0, PCHFLD

PUNCH A CARD

1714 BCB1 --16

1715 BAI *E1

1716 BWL1 *E7

BRCH ON WRNG LGTH REC

1717 *** SET ERROR 4 ON ***

1718 SW E4

TURN ON ERROR IND

1719 A PUNCH WITH A DATA FIELD GREATER THAN 80 CHARACTERS DOES NOT TURN

1720 ON WLR

1721 MLCWS 2MA, PCHFLD&80

SET NORMAL WMGM

1722 B TYP1

1723 DCW 2CHK ROUT N13 IF CRDS IN ANY PCH PKT2, G

1724 H WAIT FOR ACTION

1725 N13XIT B MONITR

1 04758 N

2 04760

12 04761 D 09824 09900 7

10 04773 M 240 09900 W

7 04783 R 04773 2

7 04790 R 04797 M

7 04797 R 04810 -

6 04804 , 01804

6 04810 / 09980

10 04816 M 240 09900 W

7 04826 R 04816 2

7 04833 R 04840 M

7 04840 R 04853 -

6 04847 , 01805

12 04853 D 09824 09980 7

7 04865 J 01593

35 04906

1 04908 .

7 04909 J 02066

PUNCH PATTERNS--SEL POCKETS IN 6 BIT MODE

PGLIN

LABEL

OPCD

OPERAND

*** PUNCH PATTERNS AND STACK IN SELECTED POCKETS ***

THIS ROUTINE PUNCHES THREE PATTERNS CARDS AND STACKS THEM IN A GIVEN SEQUENCE, THESE PATTERNS ARE REPEATED 27 TIMES WITH THE STACKING SEQUENCE BEING ALTERED EACH TIME. IN ADDITION TO THE DATA PATTERN PUNCHED IN THE CARDS, COLUMN 1-79 COLUMN 80 WILL CONTAIN A 0, 4, OR 8 ACCORDING TO THE POCKET INTO WHICH THE CARD WILL BE STACKED. ALL PUNCHING IS DONE IN THE MOVE MODE AND NOT READY OR WLR ERROR ARE INDICATED AS STATUS ERRORS. IF A DATA CHECK OCCURS THE FAILING PATTERN IS DISPLAYED ALONG WITH ERROR 5. IF A HOLE COUNT ERROR OCCURS THE FAILING PATTERN IS DISPLAYED ALONG WITH ERROR 6. THE ROUTINE ENDS BY REQUESTING THAT THE CARDS FROM POCKET 0, THEN 4 THEN 8 BE REMOVED AND SAVED BEHIND THE PUNCHED ERROR DECK IN THAT ORDER.

STACKING SEQUENCE IN GROUPS OF THREE POCKET ADDRESSES

000	400	800
004	404	804
008	408	808
040	440	840
044	444	844
048	448	848
080	480	880
084	484	884
088	488	888

DATA PATTERNS USED

79 COLUMNS OF 12-7-8 PUNCHES

IQIQIQIQ 79 COLUMNS OF ALTERNATE 12-9/11-8 PUNCHES IQIQ

#2 OAKTONWGQ20 MULTI BIT PATTERN REPEATED FOUR TIMES

N05 NCP

DC 2052

ZA CON1.X11

LOAD IX 11

1 04916 N
2 04918 Q
11 04919 M 09502 00079

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDS	INSTRUCTION
1763	HERE	CS	PCHFLD&79	6	04930	/ 09979
1764		SW	PCHFLD	6	04936	, 09900
1765		MLCS	2M3,PCHFLD&79	12	04942	D 09824 09979 3
1766		MLCB	PCHFLD&79,PCHFLD&78	12	04954	D 09979 09978 L
1767		CW	PCHFLD	6	04966	□ 09900
1768		MLCS	PHPAT1&3,PCHFLD&79	12	04972	D 04987 09979 3
1769	PHPAT1	P	0,PCHFLD	10	04984	M 240 09900 W
1770		BCB1	--16	7	04994	R 04984 2
1771		BAL	DETPAT	7	05001	R 05248 M
1772	PCHER1	CS	PCHFLD&79	6	05008	/ 09979
1773		SW	PCHFLD	6	05014	, 09900
1774		MLCA	21Q2,PCHFLD&79	12	05020	D 09862 09979 T
1775		MLCB	PCHFLD&79,PCHFLD&77	12	05032	D 09979 09977 L
1776		MLCS	PHPAT2&3,PCHFLD&79	12	05044	D 05059 09979 3
1777	PHPAT2	P	0,PCHFLD	10	05056	M 240 09900 W
1778		BCB1	--16	7	05066	R 05056 2
1779		BAL	DETPAT	7	05073	R 05248 M
1780	PCHER2	CS	PCHFLD&79	6	05080	/ 09979
1781		SW	PCHFLD	6	05086	, 09900
1782		MLCA	PAT3,PCHFLD&15	12	05092	D 09622 09915 T
1783		MLCA	PAT3,PCHFLD&35	12	05104	D 09622 09935 T
1784		MLCA	PAT3,PCHFLD&55	12	05116	D 09622 09955 T
1785		MLCA	PAT3,PCHFLD&75	12	05128	D 09622 09975 T
1786		MLCS	PHPAT3&3,PCHFLD&79	12	05140	D 05155 09979 3
1787	PHPAT3	P	0,PCHFLD	10	05152	M 240 09900 W
1788		BCB1	--16	7	05162	R 05152 2
1789		BAL	DETPAT	7	05169	R 05248 M
1790	PCHER3	A	23&,X11	11	05176	A 09832 00079
1791		MLCS	0&X11,PHPAT1&3	12	05187	D 00.M0 04987 3
1792		MLCS	1&X11,PHPAT2&3	12	05199	D 00.M1 05059 3
1793		MLCS	2&X11,PHPAT3&3	12	05211	D 00.M2 05155 3
1794		C	2&X11,20002	11	05223	C 00.M2 09865
1795		BE	N05XIT	7	05234	J 05522 S
1796		B	HERE	7	05241	J 04930
1797	DETPAT	SBR	X1C	7	05248	G 00074 B
1798		MLCS	2M3,DATA&80	12	05255	D 09824 01790 7

PUNCH PATTERNS-SEL POKETS IN 6 BIT MODE

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRES	INSTRUCTION
1799		SW	DATA	6	05267	, 01710
1800		BER1	PARITY	7	05273	R 05312 4
1801		BEF1	HOLECT	7	05280	R 05349 8
1802		BA1	STACHK	7	05287	R 03122 M
1803		S	2242,X10	11	05294	S 09867 00074
1804		B	06X10	7	05305	J 00.0
1805		***	SET ERROR 05 ON ***			
1806	PARITY	SW	E5,EXTRA&1	11	05312	, 01806 03041
1807			DATA CHECK OCCURED,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE			
1808		MRCWG	PCHFLD,DATA	12	05323	D 09900 01710 L
1809		BA1	STACHK	7	05335	R 03122 M
1810		B	06X10	7	05342	J 00.0
1811		***	SET ERROR 06 ON ***			
1812	HOLECT	SW	E6,EXTRA&1	11	05349	, 01807 03041
1813			HOLE COUNT CHECK,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE			
1814		BCE	PAT2ER,PCHFLD,1	12	05360	B 05446 09900 M
1815		BCE	PAT1ER,PCHFLD,1	12	05372	B 05484 09900 I
1816		MLCA	PAT3,DATA&15	12	05384	D 09622 01725 I
1817		MLCA	PAT3,DATA&35	12	05396	D 09622 01745 I
1818		MLCA	PAT3,DATA&55	12	05408	D 09622 01765 I
1819		MLCA	PAT3,DATA&75	12	05420	D 09622 01785 I
1820		BA1	STACHK	7	05432	R 03122 M
1821		B	06X10	7	05439	J 00.0
1822	PAT2ER	MLCA	21Q2,DATA&79	12	05446	D 09862 01789 I
1823		MLCB	DATA&79,DATA&77	12	05458	D 01789 01787 L
1824		BA1	STACHK	7	05470	R 03122 M
1825		B	06X10	7	05477	J 00.0
1826	PAT1ER	MLCS	2M2,DATA&79	12	05484	D 09824 01789 3
1827		MLCB	DATA&79,DATA&78	12	05496	D 01789 01788 L
1828		BA1	STACHK	7	05508	R 03122 M
1829		B	06X10	7	05515	J 00.0
1830	N05X1T	B	MONITR	7	05522	J 02066

PGLIN	LABEL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
1832			*** PUNCH PATTERNS IN LOAD MODE AND STACK IN POCKETS ***			
1833						
1834			THIS ROUTINE IS IDENTICAL TO THE MOVE MODE ROUTINE NOS EXCEPT			
1835			THAT ALL PUNCHING IS DONE IN LOAD MODE.A DATA CHECK WILL CAUSE			
1836			ERROR 7,AND A HOLE COUNT CHECK WILL CAUSE ERROR 8.FOR A MORE DE-			
1837			TAILED DESCRIPTION REFERENCE ROUTINE NOS.			
1838						
1839	N14	NOP		1	05529	N
1840		DC	2142	2	05531	
1841		ZA	CON1,X11	11	05532	Q 09502 00079
1842	HERE2	CS	PCHFLD&79	6	05543	/ 09979
1843		SW	PCHFLD	6	05549	, 09900
1844		MLCS	2M2,PCHFLD&79	12	05555	D 09824 09979 3
1845		MLCB	PCHFLD&79,PCHFLD&78	12	05567	D 09979 09978 L
1846		CH	PCHFLD	6	05579	D 09900
1847		MLCS	PHPAT4&3,PCHFLD&79	12	05585	D 05600 09979 3
1848	PHPAT4	PW	O,PCHFLD	10	05597	L 240 09900 M
1849		BCB1	--16	7	05607	R 05597 2
1850		BA1	DETLPT	7	05614	R 05957 M
1851	PCHER4	NOPWM		1	05621	N
1852		B	CLRIT	7	05622	J 05681
1853		SW	PCHER4&1	6	05629	, 05622
1854		B	TYPI	7	05635	J 01593
1855		DCW	2SAVE CARDS FROM P-0,4,8,IN THAT ORDER2,G	37	05678	
1856		H	WAIT FOR ACTION	1	05680	.
1857	CLRIT	CS	PCHFLD&79	6	05681	/ 09979
1858		SW	PCHFLD	6	05687	, 09900
1859		MLCWS	2M2,PCHFLD&40	12	05693	D 09824 09940 7
1860		MLCA	2IC2,PCHFLD&39	12	05705	D 09862 09939 1
1861		MLCB	PCHFLD&39,PCHFLD&37	12	05717	D 09939 09937 L
1862		MRWG	PCHFLD,PCHFLD&1	12	05729	D 09900 09901 .
1863		MLCS	PHPAT5&3,PCHFLD&39	12	05741	D 05756 09939 3
1864	PHPAT5	PW	O,PCHFLD	10	05753	L 240 09900 M
1865		BCB1	--16	7	05763	R 05753 2
1866		BA1	DETLPT	7	05770	R 05957 M

PUNCH PATTERNS--SEL POKETS IN LOAD MODE

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CT ADDR INSTRUCTION

PGLIN LABEL

1867	PCHERS	CS	PCHFLOE79	6	05777	/ 09979
1868		SW	PCHFLO	6	05783	, 09900
1869		MLCA	PAT3,PCHFLOE15	12	05789	D 09622 09915 T
1870		MLCWA	PAT3,PCHFLOE35	12	05801	D 09622 09935 X
1871		MLCWA	PAT3,PCHFLOE55	12	05813	D 09622 09955 X
1872		MLCWA	PAT3,PCHFLOE75	12	05825	D 09622 09975 X
1873		MLCWS	2M2,PCHFLOE76	12	05837	D 09824 09976 T
1874		MLCS	PHPAT6E3,PCHFLOE75	12	05849	D 05864 09975 3
1875	PHPAT6	PW	O,PCHFLO	10	05861	L 240 09900 W
1876		BCB1	*-16	7	05871	R 05861 2
1877		BA1	DETLPT	7	05878	R 05957 M
1878	PCHER6	A	232,X11	11	05885	A 09832 00079
1879		MLCS	0EX11,PHPAT4E3	12	05896	D 00.M0 05600 3
1880		MLCS	1EX11,PHPAT5E3	12	05908	D 00.M1 05756 3
1881		MLCS	2EX11,PHPAT6E3	12	05920	D 00.M2 05864 3
1882		C	2EX11,20002	11	05932	C 00.M2 09865
1883		BE	N14XIT	7	05943	J 06234 S
1884		B	HERE2	7	05950	J 05543
1885	DETLPT	SBR	X10	7	05957	G 00074 B
1886		MLCWS	2M2,DATAE80	12	05964	D 09824 01790 7
1887		SW	DATA	6	05976	, 01710
1888		BER1	LPARTY	7	05982	R 06021 4
1889		BEF1	LHOLCT	7	05989	R 06058 8
1890		BA1	STACHK	7	05996	R 03122 M
1891		S	2242,X10	11	06003	S 09867 00074
1892		B	0EX10	7	06014	J 00..0
1893		***	SET ERROR 7 ON ***			
1894	LPARTY	SW	E7,EXTRA81	11	06021	, 01808 03041
1895			DATA CHECK OCCURED,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE			
1896		MRCWG	PCHFLO,DATA	12	06032	D 09900 01710 L
1897	REPORT	BA1	STACHK	7	06044	R 03122 M
1898		B	0EX10	7	06051	J 00..0
1899		***	SET ERROR 8 ON ***			
1900	LHOLCT	SW	E8,EXTRA81	11	06058	, 01809 03041
1901			HOLE COUNT CHECK,FAILING PATTERN DISPLAYED WITH ERROR MESSAGE			
1902		BCE	PAT5ER,PCHFLO,2	12	06069	B 06148 09900 #

PUNCH PATTERNS-SEL POKETS IN LOAD MODE

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PGLIN	LABEL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
1903		BCE	PAT4ER,PCHFLD,I	12	06081	B 06203 09900 I
1904		MLCWA	PAT3,DATA&15	12	06093	D 09622 01725 X
1905		MLCWA	PAT3,DATA&35	12	06105	D 09622 01745 X
1906		MLCWA	PAT3,DATA&55	12	06117	D 09622 01765 X
1907		MLCWA	PAT3,DATA&75	12	06129	D 09622 01785 X
1908		B	REPORT	7	06141	J 06044
1909	PAT5ER	MLCA	2IQ2,DATA&39	12	06148	D 09862 01749 I
1910		MLCB	DATA&39,DATA&38	12	06160	D 01749 01748 L
1911		MLCWS	2MA,DATA&40	12	06172	D 09824 01750 7
1912		MRWG	DATA,DATA&1	12	06184	D 01710 01711 *
1913		B	REPORT	7	06196	J 06044
1914	PAT4ER	MLCS	2MA,DATA&79	12	06203	D 09824 01789 3
1915		MLCB	DATA&79,DATA&78	12	06215	D 01789 01788 L
1916		B	REPORT	7	06227	J 06044
1917	N14X1T	CS	PCHFLD&79	6	06234	/ 09979
1918		P	0,PCHFLD	10	06240	M 240 09900 W
1919		BCB1	*-16	7	06250	R 06240 2
1920		BA1	*&1	7	06257	R 06264 M
1921		B	MONITR	7	06264	J 02066

LOAD FAILING PATTERN 2
INTO ERROR MESSAGE
DATA FIELD
LOAD FAILING
PATTERN 1
PASS A CARD

CT ADDR INSTRUCTION

READER SPEED
OPCOD OPERAND

PGLIN LABEL

1923 *** TIME READER FOR ONE MINUTE ***

1924

1925 THIS ROUTINE DETERMINE THE MAXIMUM SPEED OF THE READER IN CARDS

1926 PER MINUTE. THIS IS DONE BY LOOPING FOR ONE MINUTE WHILE READING

1927 BLANK CARDS--THE CARDS MAY BE USED AGAIN--AND COUNTING THE NUMBER OF

1928 CARDS READ. THE NUMBER OF CARDS READ IN ONE MINUTE IS TYPED OUT AND

1929 A POOR RESULT MAY INDICATE POSSIBLE MECHANICAL TROUBLES DEVELOPING

1930

1931	N06	NOP			1	06271	N
1932		DC	2062	ROUTINE ID	2	06273	
1933	READSW	NOPWM			1	06274	N
1934		B	N20XIT		7	06275	J 08388
1935		CS	READFD079	CLEAR READ FIELD	6	06282	/ 09979
1936		S	ACCUM	RESET	6	06288	S 09354
1937		S	MINUTE	COUNTERS	6	06294	S 09359
1938		S	PCRDCT	AND ACCUMULATOR	6	06300	S 09357
1939		BAV	*E1	RESET OVERFLOW	7	06306	J 06313 2
1940	PASCRD	R	0,READFO	PASS A CARD	10	06313	M 110 09900 R
1941		BCB1	COUNT2	BRCH BUSY	7	06323	R 06380 2
1942		BNR1	N06XIT	BRCH ON NOT READY	7	06330	R 06484 1
1943		BAL	*E1		7	06337	R 06344 M
1944		A	20C12,PCRDCT	COUNT CARDS	11	06344	A 09857 09357
1945		A	28802,ACCUM	CORRECT ACCUMULATOR	11	06355	A 09860 09354
1946		BAV	ONE2ND	BRCH IF 1 SECOND IS UP	7	06366	J 06405 2
1947		B	PASCRD		7	06373	J 06313
1948	COUNT2	A	LOCPT1,ACCUM	ADD LOOP TIME TO ACCUMULATOR	11	06380	A 09362 09354
1949		BAV	*E8	BRCH EVERY SECOND	7	06391	J 06405 2
1950		B	PASCRD		7	06398	J 06313
1951	ONE2ND	A	212,MINUTE	ADD 1 TO MINUTE COUNT	11	06405	A 09826 09359
1952		BCE	*E8,MINUTE-1.6	BRCH AFTER 60 SECONDS	12	06416	B 06435 09358 6
1953		B	PASCRD		7	06428	J 06313
1954		A	212,PCRDCT	CORRECT CARD COUNT	11	06435	A 09826 09357
1955		MLNA	PCRDCT,RESPDMG013	MOVE READER CARD COUNT	12	06446	D 09357 06478 /
1956		B	TYPI		7	06458	J 01593
1957	RSPDMG	DCW	2RDR SPD IS /MIN2,G		18	06465	

CT ADDR INSTRUCTION

7 06484 J 02066

PGLIN LABEL OPCOD OPERAND

1958 N06XIT 8 MONITR

READER CLUTCH TEST

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

1960 *** AGGRAVATE CLUTCH ENGAGEMENT ***
 1961 THIS TEST SIMULATES THE WORSE CASE ENGAGEMENT SITUATION FOR THE
 1962 CLUTCH. THIS IS DONE BY ISSUING READ OPS AS CLOSE TO LATCH UP TIME
 1963 AS POSSIBLE. THIS IS DONE WITH DELAYS WHICH ALLOW 180,360,540, AND
 1964 720 DEGREES BETWEEN READ OPS. FAILING CONDITION FOR THIS TEST WILL
 1965 BE A READER STOP

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1967	N07	NOP		1	06491	N
1968		DC	3073	2	06493	
1969		CS	READFD&79	6	06494	/ 09979
1970	LATCH2	S	ACCUM	6	06500	S 09354
1971		R	0, READFD	10	06506	M 210 09900 R
1972		BCB1	--16	7	06516	R 04506 2
1973		BAL	*C1	7	06523	R 06530 M
1974		BNR1	STACHK	7	06530	R 03122 1
1975	DELAYS	A	DELAY, ACCUM	11	06537	A 09373 09354
1976		C	ACCUM, TERM5	11	06548	C 09354 09790
1977		BL	*E8	7	06559	J 06573 T
1978		B	DELAYS	7	06566	J 06537
1979		R	0, READFD	10	06573	M 210 09900 R
1980		BCB1	--16	7	06583	R 06573 2
1981		BAL	*C1	7	06590	R 06597 M
1982		BNR1	STACHK	7	06597	R 03122 1
1983	DELAY6	A	DELAY, ACCUM	11	06604	A 09373 09354
1984		C	ACCUM, TERM6	11	06615	C 09354 09796
1985		BL	*E8	7	06626	J 06640 T
1986		B	DELAY6	7	06633	J 06604
1987		R	0, READFD	10	06640	M 210 09900 R
1988		BCB1	--16	7	06650	R 06640 2
1989		BAL	*C1	7	06657	R 06664 M
1990		BNR1	STACHK	7	06664	R 03122 1
1991	DELAY7	A	DELAY, ACCUM	11	06671	A 09373 09354
1992		C	ACCUM, TERM7	11	06682	C 09354 09802
1993		BL	*E8	7	06693	J 06707 T
1994		B	DELAY7	7	06700	J 06671

READER CLUTCH TEST

PGLIN	LABEL	OPCD	OPRAND	CT	ADDRS	INSTRUCTION
1995		R	0,READFD	10	06707	M 210 09900 R
1996		BCBI	--16	7	06717	R 06707 2
1997		BAL	*E1	7	06724	R 06731 M
1998		BNRI	STACHK	7	06731	R 03122 1
1999	DELAY8	A	DELAY,ACCUM	11	06738	A 09373 09354
2000		C	ACCUM,TERM8	11	06749	C 09354 09808
2001		BL	*E8	7	06760	J 06774 T
2002		B	DELAY8	7	06767	J 06738
2003		A	216,TENCNT	11	06774	A 09826 09368
2004		BZ	*E8	7	06785	J 06799 V
2005		B	LATCH2	7	06792	J 06500
2006	N02XIT	B	MONITR	7	06799	J 02066

PASS A CARD

BRCH NOT READY

ADD DELAY TO ACCUM

IS IT TIME TO TERMINATE

IF SO BRCH

COUNT TEN PASSES

BRCH AFTER TENTH PASS

GO TRY ANOTHER PASS

TEST READ BUSY
OPC00 OPERAND

CT ADDR INSTRUCTION

PGLIN

LABEL

*** SET BUSY ON READER

THIS ROUTINE ISSUES TWO SUCCESSIVE READS AND THEN CHECKS THE
BUSY INDICATOR, IF IT IS NOT ON ERROR 9 IS INDICATED.

N15

NCP

2152

ROUTINE 10

CS READFD0679

CLEAR DATA FIELD

R 0, READFD

PASS A CARD

BCB1 --16

BAL *E1

R 1, READFD

TRY TO PASS A CARD

BAL *E1

BCB1 *E7

BRCH BUSY

*** SET ERROR 9 ON ***

SW

E9

TURN

TWO SUCCESSIVE READS DID NOT TURN ON THE BUSY INDICATOR

N15X1T 8 MONITR

1 06806 N

2 06808

6 06809 / 09979

10 06815 M X10 09900 R

7 06825 R 06815 2

7 06832 R 06839 M

10 06839 M X11 09900 R

7 06849 R 06856 M

7 06856 R 06869 2

6 06863 • 01810

7 06869 J 02066

PGLIN LABEL TEST WLR ON READER
OPCOD OPERAND

CT ADDR INSTRUCTION

2026 *** SET WLR ON READER ***

2027

2028 THIS ROUTINE ISSUES A READ OP WITH SHORT FIELD AND CHECKS FOR A
2029 WLR, IF THE INDICATOR IS NOT ON ERROR 10 IS INDICATED. A READ OP
2030 WITH A LONG DATA FIELD IS ISSUED AND WLR IS CHECKED, IF IT IS NOT
2031 ON ERROR 11 IS SET ON.

2032

2033 N16 NOP

2034 DC 2162

ROUTINE ID

2035 MLCWS 2162, READFD

SET READ FIELD SHORT

2036 R 0, READFD

PASS A CARD

2037 BC81 --16

7 06901 R 06891 2

2038 BA1 21

7 06908 R 06915 M

2039 BWL1 27

7 06915 R 06928 -

2040 *** SET ERROR 10 ON ***

2041 SW E10

TURN ON ERROR IND

2042 A READ OP WITH A DATA FIELD OF 0 DOES NOT TURN ON WLR

6 06922 01811

2043 CS READFD 80

SET READ FIELD LONG

2044 R 0, READFD

PASS A CARD

2045 BC81 --16

6 06928 / 09980

2046 BA1 21

10 06934 M 210 09900 R

2047 BWL1 27

7 06944 R 06934 2

2048 *** SET ERROR 11 ON ***

2049 SW E11

TURN ON ERROR IND

2050 A READ OP WITH A DATA FIELD OF MORE THAN 80 CHARS DOES NOT TURN

6 06965 01812

2051 ON WLR

2052 MLCWS 2162, READFD 80

12 06971 D 09824 09980 7

2053 N16XIT 8 MONITR

7 06983 J 02066

CT ADDR INSTRUCTION

NO TRANSFER DUE TO SSF AND READ AND NO STACK

PGLIN LABEL

OPCOD OPERAND

*** SET NO TRANSFER ON READER ***

THIS ROUTINE ISSUES TWO SUCCESSIVE READ AND NO STACK OPS AND THEN CHECKS NO TRANSFER, IF IT IS NOT ON ERROR 12 IS INDICATED. TWO SUCCESSIVE STACKER SELECT AND FEED OPS ARE ISSUED AND THE NO TRANSFER INDICATOR IS CHECKED, IF IT IS NOT ON ERROR 13 IS INDICATED.

2055	N17	NOP		1	06990	N
2056		DC	2172	2	06992	
2057		R	9, READFD	10	06993	M 219 09900 R
2058		BCB1	--16	7	07003	R 06993 2 G
2059		BAL	*E1	7	07010	R 07017 M
2060		R	9, READFD	10	07017	M 219 09900 R
2061		BCB1	--16	7	07027	R 07017 2 G
2062		BAL	*E1	7	07034	R 07041 M S
2063		BNT1	*E7	7	07041	R 07054 B
2064		***	SET ERROR 12 ON ***	6	07048	01813
2065		SW	E12			
2066		TURN ON ERROR IND				
2067		TWO SUCCESSIVE READ AND NO STACK OPS DOES NOT TURN ON NO TRANSFER				
2068	SSF1	SSF	0	2	07054	K 0
2069		BCB1	--8	7	07056	R 07054 2 G
2070		BAL	*E1	7	07063	R 07070 M
2071	SSF2	SSF	0	2	07070	K 0
2072		BCB1	--8	7	07072	R 07070 2 G
2073		BAL	*E1	7	07079	R 07086 M S
2074		BNT1	*E7	7	07086	R 07099 B
2075		***	SET ERROR 13 ON ***	6	07093	01814
2076		SW	E13			
2077		TURN ON ERROR IND				
2078		TWO SUCCESSIVE STACKER SELECT AND FEED OPS DO NOT TURN ON NO TRANS				
2079	N17XIT	B	MONITR	7	07099	J 02066

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

2086 *** SET DATA CHECK ON READER ***

2087
2088 THIS ROUTINE USES THE ERROR DECK PUNCHED IN ROUTINE N12 TO CAUSE
2089 VALIDITY CHECKS,AND DATA CHECKS.THE ERROR DECK READ CONTAINS 50
2090 CARDS WITH ONE ILLEGAL PUNCH PER CARD.EACH CARD READ SHOULD CAUSE
2091 A DATA CHECK,IF IT DOES NOT ERROR 14 IS INDICATED.THE FAILING CARD
2092 WILL BE THE LAST CARD IN POCKET 1,THE CARDS THAT CAUSE FRRORS WILL
2093 FALL INTO POCKET 0.

2094
2095 THE ILLEGAL PUNCHES EXPECTED ARE,EACH SET OF PUNCHES WILL BE IN 40
2096 12 12 12 12 12 12 12 12 11 11 11 11 11 11 11 11 11 11 11 11
2097 0
2098 1 2 3 4 5 6 7 8 9 1 2 3 4 5 6 7 8 9

2099
2100 1 1 1 2 2 2 2 2 3 3 3 3 4 4 4 4 5 5 5 6 6 7 8
2101 7 8 9 3 4 5 6 7 9 4 5 6 7 9 5 6 7 9 6 7 9 7 9 9 9

2102
2103 N18 NOP ROUTINE ID
2104 DC 2182
2105 B TYP1
2106 DCW 2CLR RDR,LOAD ERREPATTERNBP-0,4,88 DECKSA,G
2107 H WAIT FOR ACTION

2108 ZA 212,X11
2109 R 1,READFD READ A CARD
2110 BC81 *-16
2111 BAI *21
2112 BER1 CNTECD BRCH ON DATA CHECK

2113 *** SET ERROR 14 ON ***

2114 SW E14 TURN ON ERROR IND
2115 ILLEGAL PUNCHES DID NOT CAUSE DATA CHECK,FAILING CARD IN POCKET 1

2116 B MONITR

2117 CNTECD A 212,X11 COUNT ERROR CARDS

2118 BCE *28,X11-1,5 BRCH

2119 B RDERCD

2120 N18XIT B MONITR

1 07106 N
2 07108
7 07109 J 01593
39 07154
1 07156
11 07157 M 09826 00079
10 07168 M 211 09900 R
7 07178 R 07168 2
7 07185 R 07192 M
7 07192 R 07212 4
6 07199 01815
7 07205 J 02066
11 07212 A 09826 00079
12 07223 B 07242 00078 5
7 07235 J 07168
7 07242 J 02066

READ ERROR DECK
OPCOD OPERAND

PGLIN LABEL

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CT ADDR INSTRUCTION

PGLIN

LABEL

OPC00 OPERAND

2122 *** READ PATTERN CARDS AND STACK ***

2123
2124 THIS ROUTINE READS THE PATTERN CARDS PUNCHED IN THE MOVE MODE IN
2125 ROUTINE NOS.THIS ROUTINE EXPECTS TO FIND ONE OF THREE PATTERNS AND
2126 ALSO CHECKS THE POCKET ADDRESS IN COLUMN 80.THE POCKET ADDRESSES
2127 ARE EXPECTED TO RUN 27 CARDS WITH 0,27 CARDS WITH 4,AND 27 CARDS
2128 WITH 8 IN THAT ORDER.IF THE PUNCH MISS STACKED ANY CARDS THE SEQ-
2129 UENCE IS BROKEN AND ERROR 19 IS INDICATED.THE FIRST 27 CARDS ARE
2130 STACKED IN POCKET 0,THE NEXT IN POCKET 1,AND THE LAST 27 IN POCKET
2131 2.EACH CARD READ IS CHECK FOR A 12-7-8,ALTERNATE 12-9/11-8,OR
2132 MULTI BIT PATTERN,IF IT IS NONE OF THESE ERROR 15 AND THE FAILING
2133 DATA IS DISPLAYED.IF A CARD DOES NOT CONTAIN THE ENTIRE PATTERN
2134 ERROR 16 IS INDICATED FOR 12-7-8,ERROR 17 FOR ALTERNATE 12-9/11-8,
2135 AND ERROR 18 FOR MULTI BIT PATTERN.THE FAILING PATTERN IS DISPLAY-
2136 ED WITH EACH ERROR.

2137 PATTERNS EXPECTED

2138 79 COLUMNS OF 12-7-8 PUNCHES

2139 IQIQ 79 COLUMNS OF 12-9/11-8 PUNCHES IQIQIQ

2140 #2 OAKTONWGQZO MULTI BIT PATTERN REPEATED 4 TIMES

2141 N09

NOP

1 07249 N

2142 DC

2092

ROUTINE 10

2 07251

2143 S

CNTCRD

6 07252 S 09370

2144 MLCS

202,ROPAT&3

RESET POCKET ADDRESS

12 07258 D 09868 07291 3

2145 MLCS

203,NEXRD&11

RESET BCE MODIFIER

12 07270 D 09868 07578 3

2146 CS

READFD&79

CLEAR DATA FIELD

6 07282 / 09979

2147 ROPAT

0,READFD

READ A PATTERN CARD

10 07288 M 310 09900 R

2148 BC81

--16

7 07298 R 07288 2

2149 MRCWG READFD,DATA

LOAD FAILING PATTERN

12 07305 D 09900 01710 L

2150 BAI READIE

7 07317 R 07366 M

2151 SW READFD

6 07324 . 09900

2152 BCE GM,READFD,M

CHECK FOR 12-7-8

12 07330 B 07384 09900 M

2157	BCE	IQ,READFD,I	CHECK FOR 12/11-8	12	07342	8 07420 09900 I
2158	BCE	POUND,READFD,#	CHECK FOR MULTI BIT	12	07354	8 07456 09900 #
2159	***	SET ERROR 15 ON ***				
2160	SW	E15,EXTRA&1	TURN ON ERROR IND	11	07366	, 01816 03041
2161			DATA READ IS NOT ONE OF THE THREE EXPECTED PATTERNS,OR CARD READ			
2162			CAUSED DATA CHECK,FAILING PATTERN IS DISPLAYED.			
2163	B	RDPTR	GO REPORT ERROR	7	07377	J 07560
2164	C	READFD&78,READFD&77	CHECK FOR ALL 12-7-8 PUNCHES	11	07384	C 09978 09977
2165	BE	NEXRD	BRCH IF SC	7	07395	J 07567 S
2166	***	SET ERROR 16 ON ***				
2167	SW	E16,EXTRA&1	TURN ON ERROR IND	11	07402	, 01817 03041
2168			12-7-8 PATTERN IS NOT CORRECT ACCROSS ENTIRE CARD,POCKET ADDRESS			
2169			DISPLAYED AS 80TH CHAR IN DATA FIELD.			
2170	B	RDPTR	GO REPORT ERROR	7	07413	J 07560
2171	C	READFD&78,READFD&76	CHECK FOR ALTERNATE 12-9/11-8	11	07420	C 09978 09976
2172	BE	NEXRD	IF SO BRCH	7	07431	J 07567 S
2173	***	SET ERROR 17 ON ***				
2174	SW	E17,EXTRA&1	TURN ON ERROR IND	11	07438	, 01818 03041
2175			ALTERNATE 12-9/11-8 PATTERN READ IS INCORRECT,POCKET ADDRESS DIS-			
2176			PLAYED AS 80TH CHAR IN DATA FIELD.			
2177	B	RDPTR	GO REPORT ERROR	7	07449	J 07560
2178	C	READFD&15,PAT3	CHECK FOR CORRECT DATA	11	07456	C 09915 09622
2179	BE	*&8	IF CORRECT BRCH	7	07467	J 07481 S
2180	B	DATAER		7	07474	J 07549
2181	C	READFD&35,PAT3	CHECK FOR CORRECT DATA	11	07481	C 09935 09622
2182	BE	*&8		7	07492	J 07506 S
2183	B	DATAER		7	07499	J 07549
2184	C	READFD&55,PAT3	CHECK FOR CORRECT DATA	11	07506	C 09955 09622
2185	BE	*&8		7	07517	J 07531 S
2186	B	DATAER		7	07524	J 07549
2187	C	READFD&75,PAT3	CHECK FOR CORRECT DATA	11	07531	C 09975 09622
2188	BE	NEXRD		7	07542	J 07567 S
2189	***	SET ERROR 18 ON ***				
2190	SW	E18,EXTRA&1		11	07549	, 01819 03041
2191			MULTI BIT PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS			
2192			80TH CHAR IN DATA FIELD.			

READ PATTERNS AND STACK LOAD MODE

RPO1 PAGE 59

CT ADDR INSTRUCTION

PGLIN LABEL

OPCD OPERAND

2217 *** READ PATTERN CARDS IN LOAD MODE AND STACK ***
 2218 THIS ROUTINE IS IDENTICAL TO THE READ MOVE MODE ROUTINE NO9 EX-
 2219 CEPT THAT ALL READS ARE PERFORMED IN LOAD MODE. IN ADDITION THE
 2220 LAST PATTERN CARD READ BY THIS ROUTINE SHOULD BE THE LAST CARD IN
 2221 THE READER AND AN ECF IS CHECKED FOR FOLLOWED BY A READ AND A NOT
 2222 READY, IF NOT READY IS NOT SET ERROR 25 IS INDICATED. IF THE EOF IS
 2223 NOT SET ERROR 20 WILL BE INDICATED. FOR GREATER DETAIL REFERENCE
 2224 ROUTINE NO9.

PGLIN	LABEL	OPCD	OPERAND	CT	ADDR	INSTRUCTION
2225	N20	NOP		1	07734	N
2226	DC	2203		2	07736	
2227	S	CNTCRD		6	07737	S 09370
2228	MLCS	302, RDPAT2&3		12	07743	D 09868 07764 3
2229	CS	READFD&79		6	07755	/ 09979
2230	RW	0, READFD		10	07761	L 210 09900 R
2231	RDPAT2			7	07771	R 07761 2
2232	BCB1	--16		12	07778	D 09900 01710 L
2233	MRCWG	READFD, DATA		7	07790	R 08322 8
2234	BEF1	ENDN20		7	07797	R 07804 M
2235	BAL	*&1		7	07804	R 07847 X
2236	BEX1	READ2E, X		12	07811	B 07865 09900 M
2237	BCE	LOADGM, READFD, M		12	07823	B 07913 09900 I
2238	BCE	LOADIQ, READFD, I		12	07835	B 08027 09900 #
2239	BCE	LPCUND, READFD, #		11	07847	, 01821 03041
2240	***	SET ERROR 20 ON ***				
2241	READ2E	SW E2C, EXTRA&1		7	07858	J 08131
2242		CARD READ DOES NOT CONTAIN ONE OF THE THREE EXPECTED PATTERNS, OR		6	07865	, 09900
2243		A DATA CHECK, NOT READY, NO TRANSFER OCCURRED.		11	07871	C 09978 09977
2244	B	RDPER2		6	07882	0 09900
2245	LOADGM	SW READFD		7	07888	J 08138 S
2246	C	READFD&78, READFD&77	CHECK FOR ALL 12-8-7 PUNCHES			
2247	CW	READFD				
2248	BE	NEXRD2	IF SO BRCH			
2249	***	SET ERROR 21 ON ***				
2250	SW	E21, EXTRA&1		11	07895	, 01822 03041
2251		12-7-8 PATTERN READ IS IN CORRECT, POCKET ADDRESS DISPLAY AS BOTH				
2252		CHAR OF DATA FIELD				

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2253		B	RDPER2	7	07906	J 08131
2254	LOADIQ	ZA	CREADFD,X12	11	07913	M 09876 00084
2255		BW	*E8,OE,X12	12	07924	V 07943 00M00 1
2256		B	IQERR	7	07936	J 07973
2257		A	212,X12	11	07943	A 09826 00084
2258		BCE	*E8,X12-1,4	12	07954	B 07973 00083 4
2259		B	LOADIQ611	7	07966	J 07924
2260	IQERR	SW	READFD641	6	07973	* 09941
2261		MLCB	READFD639,READFD679	12	07979	D 09939 09979 1
2262		C	READFD678,READFD676	11	07991	C 09978 09976
2263		BE	NEXRD2	7	08002	J 08138 S
2264		***	SET ERROR 22 ON ***			
2265		SW	E22,EXTRA61	11	08009	* 01823 03041
2266			12-9/11-8 PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS			
2267			40 CHAR OF DATA FIELD.			
2268		B	RDPER2	7	08020	J 08131
2269	LPOUND	C	PAT3-1,READFD674	11	08027	C 09621 09974
2270		BE	*E8	7	08038	J 08052 S
2271		B	DATER2	7	08045	J 08120
2272		C	PAT3,READFD655	11	08052	C 09622 09955
2273		BE	*E8	7	08063	J 08077 S
2274		B	DATER2	7	08070	J 08120
2275		C	PAT3,READFD635	11	08077	C 09622 09935
2276		BE	*E8	7	08088	J 08102 S
2277		B	DATER2	7	08095	J 08120
2278		C	PAT3,READFD615	11	08102	C 09622 09915
2279		BE	NEXRD2	7	08113	J 08138 S
2280		***	SET ERROR 23 ON ***			
2281	DATER2	SW	E23,EXTRA61	11	08120	* 01824 03041
2282			MULTI BIT PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS			
2283			76TH CHAR OF DATA FIELD.			
2284	RDPER2	B	MONITR	7	08131	J 02066
2285	NEXRD2	BCE	PKTOK2,READFD679,0	12	08138	B 08199 09979 0
2286		BCE	PKICK2,READFD675,0	12	08150	B 08199 09975 0
2287		BCE	PKTOK2,READFD639,0	12	08162	B 08199 09939 0
2288		***	SET ERROR 24 ON ***			

READ PATTERNS AND STACK LOAD MODE

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PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
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2289		SW	E24,EXTRA&1	11	08174	01825 03041
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CARD READ HAS INCORRECT POCKET ADDRESS,PUNCH MISS STACKED OR
POSSIBLY MISSED PUNCHING A CARD.CHECK MODIFIER OF BCE INSTRUCTION
AT LABLE NEXRD2 FOR POCKET ADDRESS EXPECTED.

2293		B	MONITR	7	08185	J 02066
2294		B	*&12	7	08192	J 08210

2295	PKTOK2	A	&1&,CNTCRD	11	08199	A 09826 09370
2296		CS	READFD&79	6	08210	/ 09979

2297		C	CNTCRD,&27&	11	08216	C 09370 09870
2298		BE	*&8	7	08227	J 08241 S

2299		B	RDPAI2	7	08234	J 07761
2300		S	CNTCRD	6	08241	S 09370

2301		SW	RDPAI2&3,NEXRD&11 UPDATE	11	08247	07764 08149
2302		A	&4&,NEXRD&11	11	08258	A 09871 08149

2303		A	&1&,RDPAI2&3	11	08269	A 09826 07764
2304		CW	RDPAI2&3,NEXRD&11 UPDATE	11	08280	07764 08149

2305		MLCS	NEXRD&11,NEXRD&2&23	12	08291	D 08149 08161 3
2306		MLCS	NEXRD&11,NEXRD&2&35	12	08303	D 08149 08173 3

2307		B	RDPAI2	7	08315	J 07761
2308	ENDN20	MLCS	&0&,NEXRD&11	12	08322	D 09868 08149 3

2309		MLCS	&0&,NEXRD&2&23	12	08334	D 09868 08161 3
2310		MLCS	&0&,NEXRD&2&35	12	08346	D 09868 08173 3

2311		R	0,READFD	10	08358	M &10 09900 R
2312		BNRI	N20XIT	7	08368	R 08388 1

2313		BAI	*&1	7	08375	R 08382 M
2314		***	SET ERROR 25 ON ***			

2315		SW	E25	6	08382	01826
2316			ON LAST CARD EOF WAS SET ANOTHER READ OP DID NOT SET NOT READY			

2317	N20XIT	B	MONITR	7	08388	J 02066
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CHECK READER STACKING

CT ADDR INSTRUCTION

PGLIN LABEL

OPCODE OPERAND

CT ADDR INSTRUCTION

*** CHECK CARD READER STACKING ***

THIS ROUTINE CHECKS THE CARDS STACKED IN POCKETS 1 AND 2 IN ROUTINES N09,AND N20.THE CARDS ARE LOADED INTO THE READFR FROM POCKET 1 THEN 2.THE ROUTINE EXPECTS 54 CARDS FROM POCKET 1 AND 54 CARDS FROM POCKET 2.THE CARDS STACKED WITH AN SSF INST IN 1 AND 2 POCKETS.A READ AND NO STACK IS ISSUED AND THE POCKET ADDRESS IN THE CARD IS CHECKED FOR A 4,IF ITS NOT 4,ERROR 26 IS SET.AFTER 54 CARDS ARE READ AND STACKED THE POCKET ADDRESS CHECKED IS 8,A FAILURE HERE IS INDICATED BY ERROR 27.

2319	N21	NOP			1	08395	N
2320		OC	3213	ROUTINE 10	2	08397	
2321		B	TYPI		7	08398	J 01593
2322		DCW	3	LOAD CRDS FROM P-1,2 IN THAT ORDER IN RDR2.G	42	08446	
2323		H		WAIT FOR ACTION	1	08448	.
2324		S	CNTCRD		6	08449	S 09370
2325		CS	READFD079	CLEAR DATA FIELD	6	08455	/ 09979
2326		RW	9,READFD	READ A CARD	10	08461	L X19 09900 R
2327	NOSTAK	BCB1	*-16		7	08471	R 08461 2
2328		BEX1	STACHK,M	BRCH ON ERROR	7	08478	R 03122 M
2329		BA1	*61		7	08485	R 08492 M
2330		BCE	STAKIT,READFD079,4	CHECK	12	08492	B 08558 09979 4
2331		BCE	STAKIT,READFD075,4	FCR CORRECT	12	08504	B 08558 09975 4
2332		BCE	STAKIT,READFD039,4	POCKET CODE	12	08516	B 08558 09939 4
2333		***	SET ERROR 26 ON ***				
2334		SW	E26,EXTRA01	TURN ON ERROR IND	11	08528	. 01827 03041
2335							
2336							
2337							
2338							
2339							
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2353							

CHECK READER STACKING

PGLIN	LABEL	OPCD	OPERAND	CT	ADRS	INSTRUCTION
2354		A	212,CNTCRD	11	08581	A 09826 09370
2355		C	CNTCRD,2542	11	08592	C 09370 09878
2356		BE	*28	7	08603	J 08617 S
2357		B	NOSTAK	7	08610	J 08461
2358		S	CNTCRD	6	08617	S 09370
2359	NOSTK2	RW	9,READFD	10	08623	L 219 09900 R
2360		BCB1	--16	7	08633	R 08623 2
2361		BA1	*21	7	08640	R 08647 M
2362		BEX1	STACHK,M	7	08647	R 03122 M
2363		BCE	STKIT2,READFD279,8 CHECK	12	08654	B 08720 09979 8
2364		BCE	STKIT2,READFD275,8 FOR CORRECT	12	08666	B 08720 09975 8
2365		BCE	STKIT2,READFD239,8 POCKET CODE	12	08678	B 08720 09939 8
2366		***	SET ERROR 27 ON ***			
2367		SW	E27,EXTRA21	11	08690	01828 03041
2368			CARD READ FROM POCKET 2 HAS INCORRECT ADDRESS,APPARENTLY READER			
2369			MISS STACKED CARDS,FAILING CARD DISPLAYED WITH ERROR MESSAGE			
2370		MRCWG	READFD,DATA	12	08701	D 09900 01710 L
2371		B	MONITR	7	08713	J 02066
2372	STKIT2	SSF	2	2	08720	K 2
2373		BCB1	--16	7	08722	R 08712 2
2374		BA1	*21	7	08729	R 08736 M
2375		BEX1	STACHK,M	7	08736	R 03122 M
2376		A	212,CNTCRD	11	08743	A 09826 09370
2377		C	CNTCRD,2542	11	08754	C 09370 09878
2378		BE	*28	7	08765	J 08779 S
2379		B	NOSTK2	7	08772	J 08623
2380	N21XIT	B	MONITR	7	08779	J 02066

LOCATE READY READER/PUNCH

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2382	N10	NCP		1	08786	N
2383		DC	2102	2	08788	
2384		CW	READSW21,PCHSW21	11	08789	B 06275 03721
2385		A	2572,X15	11	08800	A 09880 00099
2386		A	232,X14	11	08811	A 09832 00094
2387		BCE	N1CXIT,X15,I	12	08822	B 09170 00099 I
2388		BCE	*27,02X15,R	12	08834	B 08852 00MM0 R
2389		SW	READSW21	6	08846	* 06275
2390		BCE	*219,22X15,P	12	08852	B 08882 00MM2 P
2391		SW	PCHSW21	6	08864	* 03721
2392		BW	N10,READSW21	12	08870	V 08786 06275 I
2393		MLCA	CODE32X14,INCODE	12	08882	D 09HJ1 08913 I
2394		B	CHALTR	7	08894	J 01045
2395		DCW	TOP	5	08905	08975
2396		DC	BOTTOM	5	08910	03753
2397		DCW	2 2	1	08911	
2398		DC	2 2	1	08912	
2399	INCODE	DC	2 2	1	08913	
2400		R	9,READFD	10	08914	M X19 09900 R
2401		BEFI	*-16	7	08924	R 08914 B
2402		BAI	*21	7	08931	R 08938 M
2403		BNR1	*27	7	08938	R 08951 I
2404		SW	GOSW21	6	08945	* 08982
2405		P	0,PCHFLD	10	08951	M X40 09900 W
2406		BAI	*21	7	08961	R 08968 M
2407		BNR1	*27	7	08968	R 08981 I
2408	TOP	SW	GOSW21	6	08975	* 08982
2409	GOSW	NCPWM		1	08981	N
2410		B	*28	7	08982	J 08996
2411		B	N10	7	08989	J 08786
2412		CW	GOSW21	6	08996	B 08982
2413		MLCS	INCODE,RDYMSE7	12	09002	D 08913 09028 3
2414		B	TYPI	7	09014	J 01593
2415	RDYMSE	DCW	2TST CH 2,G	8	09021	
2416		ZA	2N01,X3	11	09030	M 09885 00039
			LOAD IX 3			

LOCATE READY READER/PUNCH

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2417		BCE	CH2SSF, INCODE.2	12	09041	B 09108 08913 2
2418		MLCS	AKA, SSF1	12	09053	D 09886 07054 3
2419		MLCS	AKA, SSF2	12	09065	D 09886 07070 3
2420		MLCS	AKA, STAKIT	12	09077	D 09886 08558 3
2421		MLCS	AKA, STKIT2	12	09089	D 09886 08720 3
2422		B	0EX3	7	09101	J 000MO
2423	CH2SSF	MLCS	AKA, SSF1	12	09108	D 09871 07054 3
2424		MLCS	AKA, SSF2	12	09120	D 09871 07070 3
2425		MLCS	AKA, STAKIT	12	09132	D 09871 08558 3
2426		MLCS	AKA, STKIT2	12	09144	D 09871 08720 3
2427		B	0EX3	7	09156	J 000MO
2428		B	0EX3	7	09163	J 000MO
2429	NIOXIT	B	MONITR	7	09170	J 02066
2430	ENDTST	B	TYPI	7	09177	J 01593
2431		DCW	APASSA.G	4	09187	
2432		BCE	2000, TAD3.1	12	09189	B 02000 01003 1
2433		B	400	7	09201	J 00400
2434		H		1	09208	.

CHECK FOR REPEATING TST

PREPARE ONE INSTRUCTION LOOP

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2436	PREP	SW	CTLFLD01,CTLFLD05	11	09209	00202 00206
2437		MLCA	CTLFLD02,LOOP01	12	09220	D 00203 01014 T
2438		BCE	SSF,LOOP,4	12	09232	B 09323 01013 4
2439		BCE	SSF,LOOP,K	12	09244	B 09323 01013 K
2440		MLCWS	CTLFLD03,LOOP02	12	09256	D 00204 01015 7
2441		MLCS	CTLFLD04,LOOP03	12	09268	D 00205 01016 3
2442		MLCA	CTLFLD06,LOOP010	12	09280	D 00207 01023 T
2443		BCE	GOL00P,LOOP02,2	12	09292	B 09335 01015 2
2444		MRCWG	CTLFLD07,PCHFLD	12	09304	D 00208 09900 L
2445		B	GOL00P	7	09316	J 09335
2446	SSF	MLCWS	000,LOOP02	12	09323	D 09821 01015 7
2447	GOL00P	CS	CTLFLD099	6	09335	/ 00300
2448		B	LOCP	7	09341	J 01013
2449		H		1	09348	.

MOVE CHANNEL CODES,MODE CODES

BRCH IF A SSF OP

MOVE UNIT CODE

MOVE POCKET CODE

MOVE MODIFIER AND B-0-S-I-0

BRCH IF A READ OP

LOAD DATA FIELD

SET NOP FOR SSF OP

CLEAR CONTROL FIELD

[illegible]

CONSTANTS INSTRUCTION

CONSTANTS
OPCODE OPERAND

PGLIN LABEL

CT ADDR

2487		2804a	3	09562	
2488		2808a	3	09565	
2489		2840a	3	09568	
2490		2844a	3	09571	
2491		2848a	3	09574	
2492		2880a	3	09577	
2493		2884a	3	09580	
2494		2888a	3	09583	
2495		2000a	3	09586	
2496	CON3	PASONE	5	09591	09398
2497	CON4	PASTWO	5	09596	09448
2498	CON7	PCHER2	5	09601	05080
2499	CON8	PCHER3	5	09606	05176
2500	PAT3	a#a.TMOAKTONWGQZ0a	16	09622	
2501	LOOPO	2284a	3	09625	
2502	LOOPI	2244a	3	09628	
2503	LOOPX	2090a	3	09631	
2504	DELAY0	2292a	3	09634	
2505	DELAY1	2260a	3	09637	
2506	DELAYX	2087a	3	09640	
2507	TERM10	2297840a	6	09646	
2508	TERM70	2357992a	6	09652	
2509	TERM30	2418144a	6	09658	
2510	TERM40	2478000a	6	09664	
2511	TERM11	2297960a	6	09670	
2512	TERM21	2357760a	6	09676	
2513	TERM31	2418080a	6	09682	
2514	TERM41	2477880a	6	09688	
2515	TERM1X	2297975a	6	09694	
2516	TERM2X	2358005a	6	09700	
2517	TERM3X	2418035a	6	09706	
2518	TERM4X	2478500a	6	09712	
2519	TRM50R	2160016a	6	09718	
2520	TRM60R	2235060a	6	09724	
2521	TRM70R	2309812a	6	09730	
2522	TRM80R	2385148a	6	09736	

PGLIN	LABEL	CONSTANTS OPCDD OPERAND
2539		202
2539		2272
2539		242
2539		READFD
2539		2542
2539		2572
2539		N01
2539		2K2
2540		*EX00
2541	PCHFLD	2 2
2542		DS 79
2543		DCW 2M2
2544		LOAD
2545		END

END OF ASSEMBLY

CT ADDR INSTRUCTION

1	09868
2	09870
1	09871
5	09876 09900
2	09878
2	09880
5	09885 03717
1	09886
	09900
1	09900
	09979
1	09980

J

5.00.08.0 RP01A SUMMARY

08.1 SET UP

- A. Load all punches to be tested with at least 300 cards and make ready.
- B. Load all readers to be tested with at least 800 cards and make ready.

08.2 LOADING

Use Standard 1410/7010 Diagnostic Load Procedures.

08.3 CONTROL

- A. Standard diagnostic TADs
- B. Special TADs

Set to 1 for additional program options. (Refer to RP01 program write-up, Section 01.3.)

08.4 ERROR MESSAGE FORMAT

"ROUTINE N00"

(Failing routine number)

"*ERROR 00 00000 M%1000000R 1248AB

A B C D E

- A. Error flag
- B. Error number, error is described in program listing.
- C. Starting address of failing routine
- D. Failing instruction (if any)
- E. Status Ind. on (if any)

- 1 Not Ready
- 2 Busy
- 4 Data Check
- 8 Ext. Condition
- A No Transfer
- B Wrong Length Record

5.00.08.0 SUMMARY (continued)

08.5 SUCCESSFUL PASS

No error typeouts and the "END OF JOB" typeout "PASS"

08.6 ERROR HALTS

There are none in RP01.

08.7 NORMAL HALTS

<u>Mem. loc.</u>	<u>Reason</u>
04480	Allow CE to unload punch pockets
04619	Allow CE to reload cards in punch
04751	Allow CE to unload punch pockets and load punch
04909	Allow CE to check punch pockets
05681	Allow CE to remove cards from punch pockets
07157	Allow CE to load test decks in reader
08449	Allow CE to reload cards in reader

08.8 TEST DECKS IN ORDER THAT THEY ARE LOADED
INTO READER

A. Error Deck - 49 Cards

- B. Pattern Deck - Move Mode
From Punch Pocket 0, 27 Cards
From Punch Pocket 4, 27 Cards
From Punch Pocket 8, 27 Cards

- C. Pattern Deck - Load Mode
From Punch Pocket 0, 27 Cards
From Punch Pocket 4, 27 Cards
From Punch Pocket 8, 27 Cards